SYSTEMS OPERATIONS

GROWTH FOR THE 1990S

INPUT

DECEMBER 1989

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GROWTH FOR THE 1990s

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1953 Gallows Road, Suite 560, Vienna, VA 22182 (703) 847-6870

Published by
INPUT
1280 Villa Street
Mountain View, CA 94041-1194
U.S.A.

Systems Integration Program (SIP)

Systems Operations—Growth for the 1990s

SIM5/USIC • 439 • 1989

Abstract

This report focuses on systems operations, defined as vendor-provided management of all or part of a user's information processing functions under a long-term contract. Under this concept, the contractor directly plans, controls, operates and manages the systems providing service to the user.

The report analyzes the systems operations market as it existed in 1988 and 1989, examines the issues and trends that appear to affect the market, and forecasts its growth through 1994. The analysis includes identification of forces driving the market, types of opportunities, leading vendors by market share, and growth forecasts by both delivery mode and vertical industry market. The report examines both delivery options: the professional services mode, on client-owned equipment and the processing services mode, on vendor-owned equipment.

The report includes buyer assessments of the issues, identification of those that lead them to contract operations activities, and the criteria used in selecting a systems operations firm. Vendors' views of the market and preferred service offerings are also provided.

The report contains 116 pages and 55 exhibits and was prepared as part of INPUT's Systems Integration Program.

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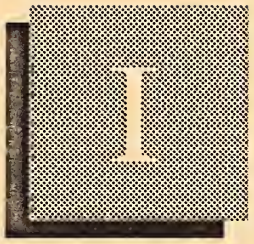
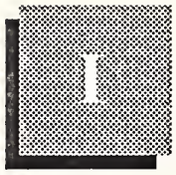


Introduction



Introduction

A Purpose of the Report

The *U.S. Systems Operations Market, 1989-1994* report examines and analyzes the market for vendor-provided systems operations services in the U.S. commercial and federal markets. The report focuses on:

- A forecast of the market size and growth from 1989 to 1994.
- The forces and trends shaping the market and how they will influence market growth.
- The major factors influencing user companies to consider and decide to use systems operations.
- The benefits and disadvantages of contracted systems operations and the internal information systems (IS) organization.
- The impact of systems integration-developed solutions on prospects for systems operations.
- The financial impact of systems operations on user/buyer costs and on vendor revenues and profits.
- The criteria that user companies use to select a systems operations vendor.
- Vendor service offerings and preferences as to equipment ownership, processing location, and pricing.
- The importance of systems operations as an element of a full service vendor's portfolio of offerings.

B

Scope and Organization

This report focuses on systems operations activities in the U.S. market and identifies user expenditures that are noncaptive (i.e., generally available to vendors). This is important because some large systems operations firms derive a significant percentage of their systems operations revenues by providing services to parent or subsidiary firms. In almost all cases, these services are not awarded on a competitive basis and are therefore not included in INPUT's forecast of the systems operations market.

C

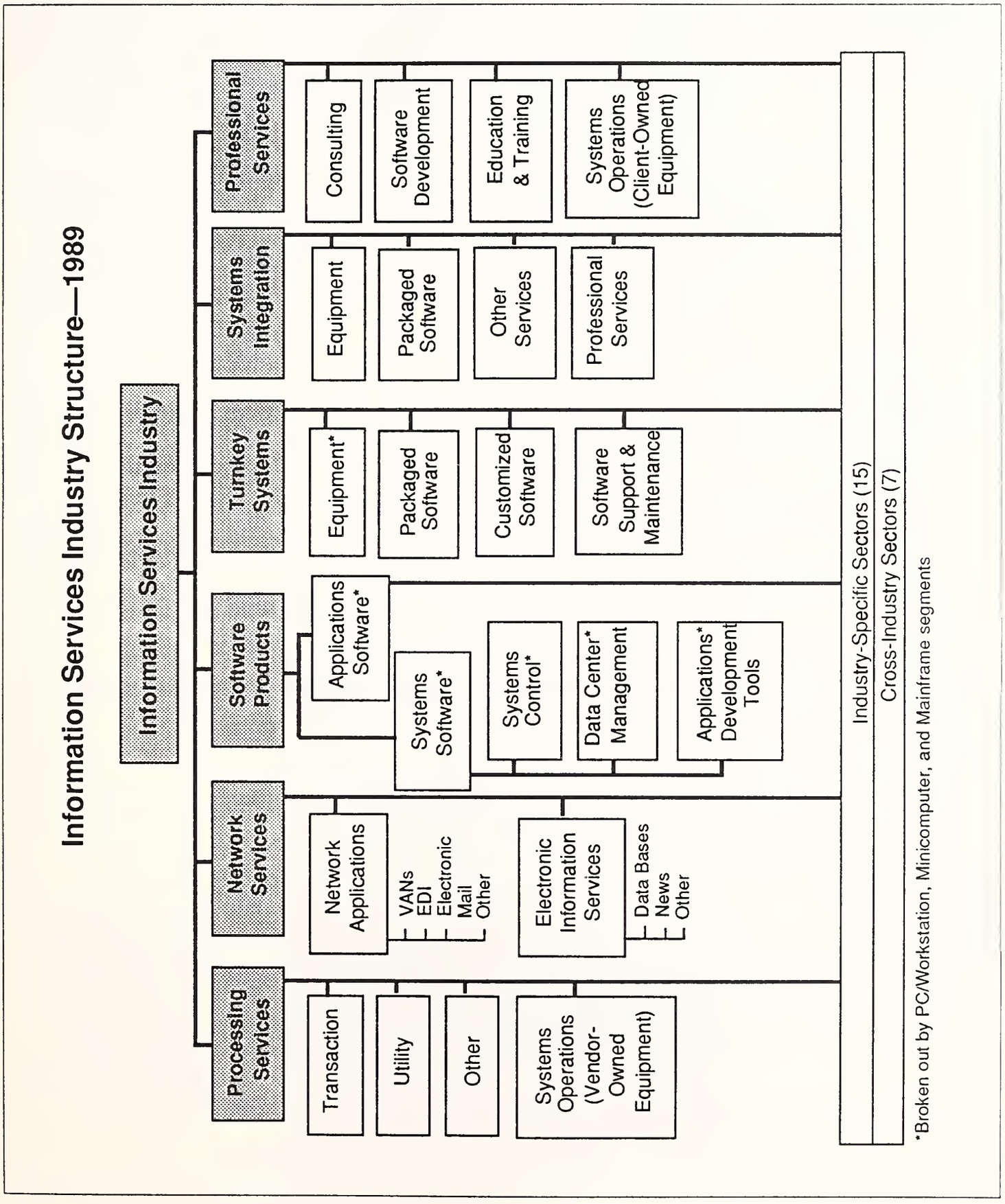
Information Services Industry Structure

INPUT divides the information services industry into six delivery modes:

- Processing services
- Network services
- Turnkey systems
- Software products
- Systems integration
- Professional services

Exhibit I-1 identifies this industry structure and the submarkets of each of the six delivery modes.

EXHIBIT I-1



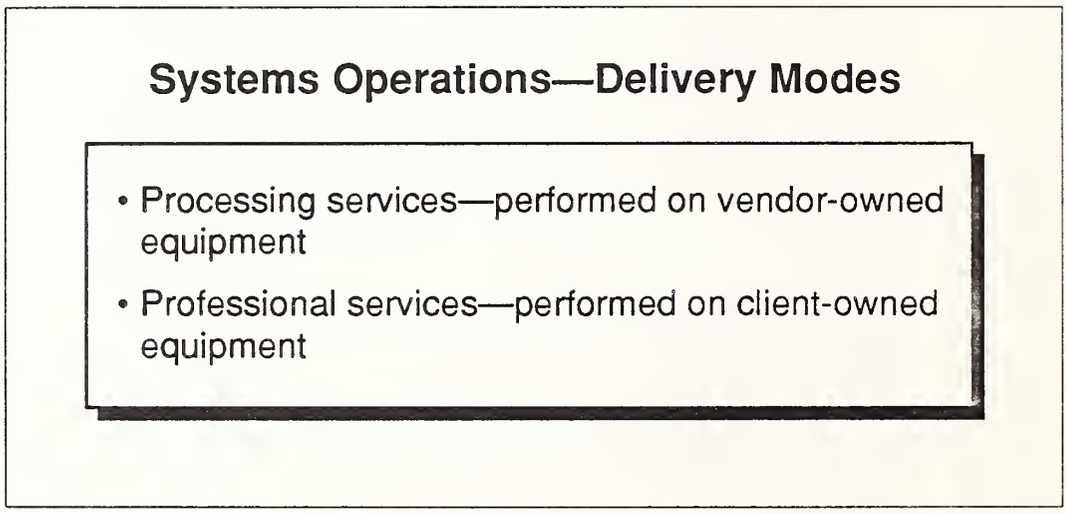
D

Systems Operations Definition and Market Structure

Systems operations is the management of all or part of the user's data processing functions under a long-term contract of not less than one year. To qualify, the contractor must directly plan, control, operate, and manage the system (equipment and systems software and/or network) and provide service to the user—either at the client's site or at the vendor's site. Systems operations is an outgrowth of facilities management.

Systems operations can be delivered through two of the six previously identified delivery modes as indicated in Exhibit I-2: processing services—the user organization's information systems applications are performed on vendor-owned equipment; and professional services—the vendor provides the staff for systems operations services on client-owned equipment.

EXHIBIT I-2



This report will discuss activities, trends, and participants in both of these segments.

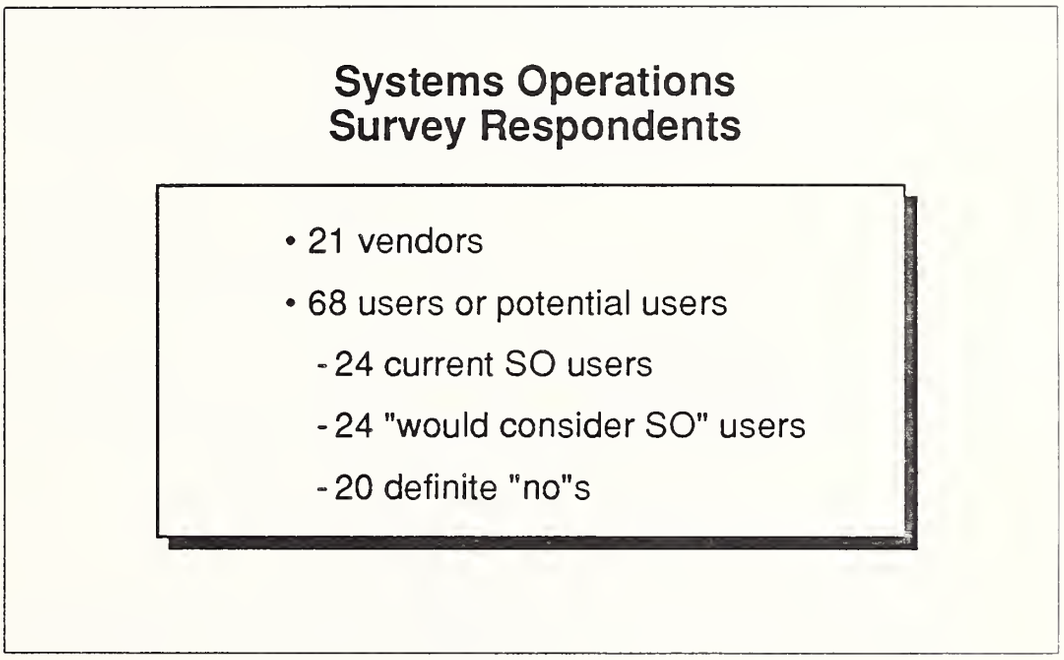
E

Research Methodology

INPUT employed two sources of research for this report. The first was a survey of vendors and current and potential users of systems operations, and the second was INPUT's annual survey of information services vendors. The first source was used to identify and compile data regarding vendor and present and potential user companies' current views regarding systems operations. The second source, the annual INPUT survey of information services vendors, was used to assist in establishing user expenditures for systems operations. This became the base year for INPUT's forecast for systems operations.

Exhibit I-3 provides a summary of the respondents to the systems operations survey, the first research source, that was administered as part of this study. The 21 vendor respondents included 18 firms that are already in the systems operations business and 3 that are not. Of the 18 firms currently in the systems operations business, 12 are U.S. firms and 6 are Canadian-based.

EXHIBIT I-3

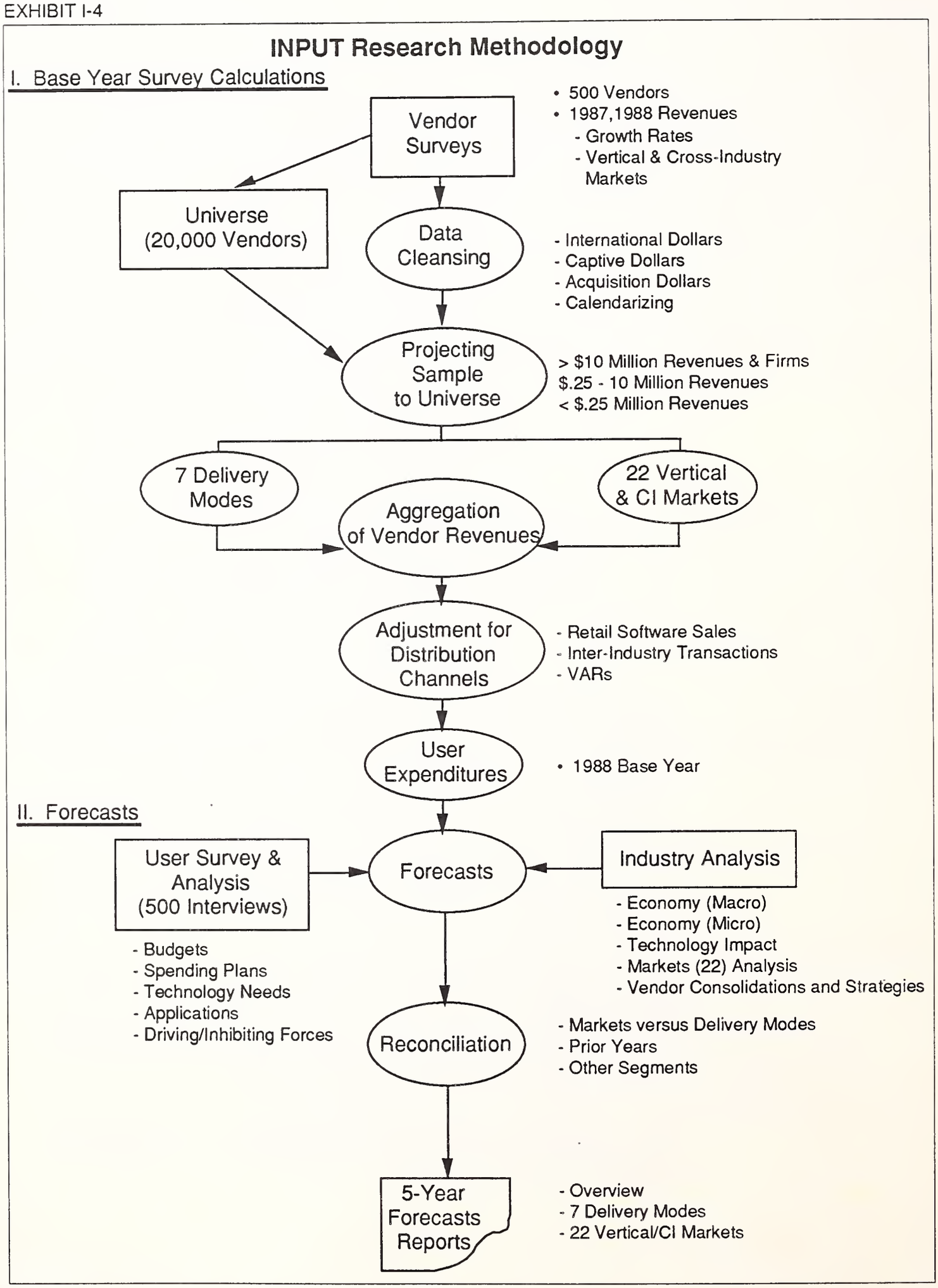


The 68 firms surveyed were distributed among existing buyers and potential buyers. A significant number of user companies' respondents conveyed a strong aversion to the use of systems operations, and their views are included in the results from the 20 companies in the definite "no" category. INPUT limited these responses to 20, and no attempt was made to quantify the percentage of users that are adverse to the use of systems operations from these samples. The study did determine that there are a significant number of potential users that would not consider employing an SO firm. These reasons will be identified and discussed in Chapter IV of this report.

INPUT methodology for data collection, analysis, and forecasting is depicted in Exhibit I-4. During the first half of 1989, INPUT conducted in-depth interviews with over 500 information services vendors, including nearly all the 250 largest firms. The smallest of this group of 250 vendors had about $22 million in revenues in 1988.

Revenues of the smaller 250 companies ranged from $250,000 to $22 million. Collectively, revenues from all 500 firms represented 65% of total information services industry revenues.

EXHIBIT I-4



Companies that are not exclusively involved in information services are identified as follows:

- If a division or a subsidiary that markets all information services for a company is generally known by its own name, then it is identified by that name rather than the parent company's name. One example is Boeing Computer Services Company, a division of aircraft manufacturer, The Boeing Company.

- If more than one division or subsidiary markets information services, the information is included in and identified by the parent organization's name. An example is Control Data Corporation.

- Organizations are reported according to their legal status as of December 1988.

Companies have been classified according to the delivery mode of service from which they derive the largest proportion of their U.S., noncaptive information services revenues.

In the case of the few very large vendors that did not respond to our survey, INPUT estimated vendor revenues from its own contacts and secondary sources. These estimates were then mailed to the CEO for verification. This process was done for all firms with more than $10 million in U.S. revenues in any one delivery mode. For firms with revenues below $10 million (and not specifically covered in the survey), INPUT created a model based on the number of such firms identified in each delivery mode and their expected average annual revenues.

For each company, INPUT subtracted revenues identified as:

- International (non-U.S.)
- Captive (within the organization)
- Acquisitions related

These surveys and estimates produced the initial vendor revenue estimates for 1988. Total base year (1988) revenues are then summed into six delivery modes and 15 vertical- and seven cross-industry segments for closer analysis and five-year projections. The revenue data in this report provided for individual companies only include the following:

- *U.S. revenues*. Only revenues derived from products or services sold in the U.S.

- *Processing services revenue.*

- *Professional services revenue.*

- *Noncaptive revenues.* Only revenues available to all vendors in an open, competitive marketplace are included. Revenue derived from sales to a partner or affiliated organizations is excluded. An example would be the sale of processing services from Litton Computer Services to another Litton division.

- *Calendar year revenues.* Approximately 30% of the vendors surveyed have fiscal years that do not coincide with calendar years. Revenues of these companies have been adjusted to a calendar year basis for consistency.

For certain delivery modes, vendor and user expenditures are fairly close. However, many microcomputer software products, for example, are marketed through indirect distribution channels such as retail stores, OEMs, and value added resellers (VARs), where conversion factors must be applied to determine the total market size based on vendor revenues. In addition, some software is sold by vendors into other information services sectors, such as processing services and network services. This software may be used in these other IS sectors' data centers and never be passed to the end user. INPUT deletes such "intraindustry" transactions from its user expenditure market data.

The following table shows the various conversion factors used by INPUT to convert vendor revenues to user expenditures (market size) figures for each delivery mode:

• Software Products		
- Application Software Products		1.18
- Systems Software Products		1.10
• Turnkey Systems	0.99	
• Systems Integration	0.99	
• Professional Services	0.99	
• Network Services	0.99	
• Processing Services	0.99	

For the 1988 user expenditures defined in this report, INPUT projects five-year market growth rates for each delivery mode and vertical/cross-industry market, based on its own analysis of technology, vendor activity, driving and inhibiting forces affecting each market and U.S. economic outlook.

F

Economic Assumptions

Forecast numbers are presented in current dollars (i.e., 1994 market sizes are in 1994 dollars). In developing the five-year forecast, INPUT has incorporated the following economic assumptions regarding the outlook for the total U.S. economy.

As shown in Exhibit I-5, real GNP growth is projected to decrease from an anticipated 2.8% annual rate in 1989 to a range of 2.0% to 2.5% over the next five years before returning to approximately current levels in the second half of the 1990s. In addition, the inflation rate, as measured by the GNP deflator, is expected to increase modestly from a projected annual rate of 4.5% to 4.8% between 1989 and 1994.

EXHIBIT I-5

Inflation/GNP Economic Assumptions (Percent)

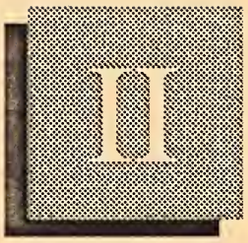
	1988A	1989E	1990E	1991E	1992E	1993E	1994E
Real GNP	4.4	2.8	2.5	2.3	2.0	2.0	2.0
GNP Deflator	3.0	4.8	5.2	5.5	5.0	4.5	4.5
Nominal GNP	7.4	7.6	7.7	7.8	7.0	6.5	6.5

G

Related INPUT Reports

For a complete view of the information services market, readers are encouraged to review other INPUT reports. These include:

- *Systems Integration Forecast & Trends, 1989-1994*
- *Systems Integration Competitive Analysis*
- *Market Analysis Services, Vertical and Cross-Industry Markets*



Executive Overview

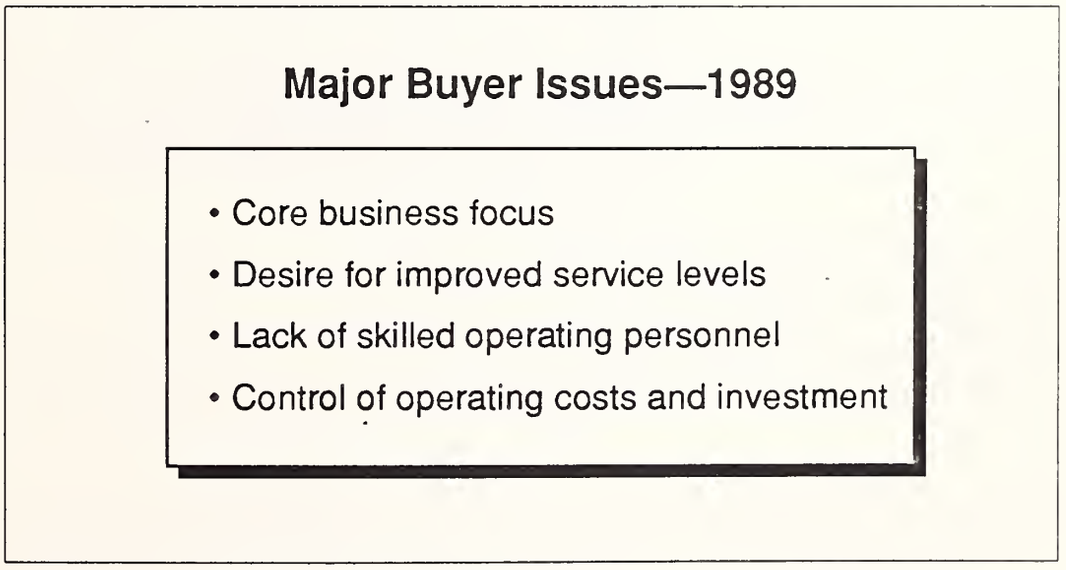
II

Executive Overview

A Major Buyer Issues

The four buyer issues shown in Exhibit II-1 are the major forces driving the growth of the systems operations market. Executive management is looking to information systems (IS) organizations to develop solutions that make a difference in the competitive posture of their businesses. Many are recognizing that computer operations, particularly of nonmission-critical systems, do not make a difference in competitiveness. They are looking to outside vendors that provide satisfactory service levels at reasonable prices to free their internal resources and investment capital for strategic development activities.

EXHIBIT II-1



The systems operations market is driven by the move to outsourcing because of IS management's lack of, and competition for, qualified in-house operating personnel. User management is looking to the information services industry to develop approaches and techniques to improve service levels. At the same time systems operations vendors are increasing personnel efficiency by minimizing the labor content required in today's data centers.

B

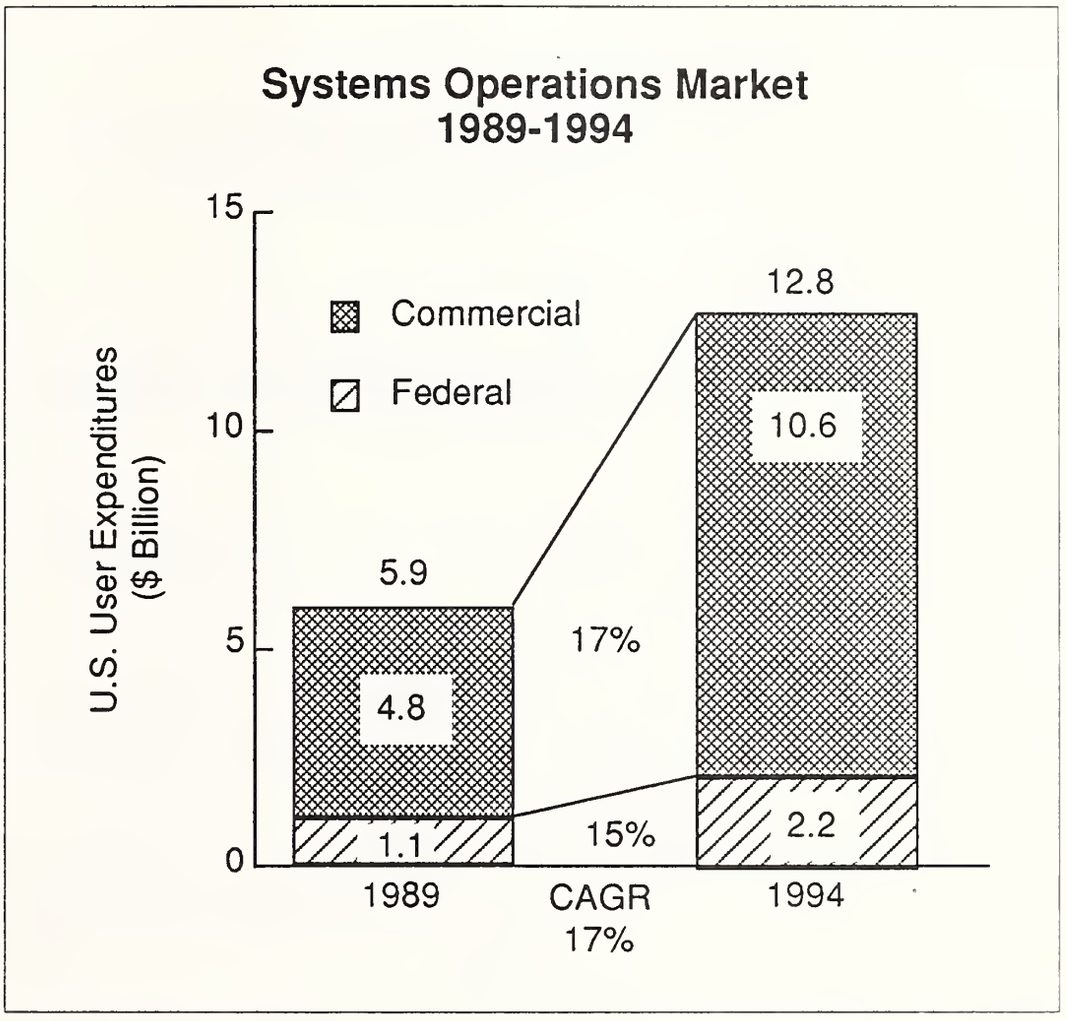
Systems Operations Market Forecast, 1989-1994

During the past year, three major information industry vendors made announcements that impacted the systems operations market. In late 1988, Andersen Consulting began to aggressively promote the systems operations service it had developed to support some of its clients' requirements. In mid-1989, IBM and Kodak announced an agreement whereby IBM would take over the operations of a major portion of Kodak's information processing operations. EDS earlier announced a major contract with Enron, under which EDS would provide and manage all of Enron's IS support.

This series of events led to a renewed interest in systems operations that will impact the forecasted growth of this market. Exhibit II-2 shows INPUT's forecast for 1989 through 1994. Both the federal and commercial markets are predicted to show strong compound annual growth rates of 15% and 17% respectively, for a combined CAGR of 17% over the five-year forecast period.

These growth rates are higher than INPUT's 1988-1993 forecast. In the commercial market, the increase reflects the driving factors discussed above. Renewed interest and growth in the federal market is being driven by deficit limits on spending and on budget shifts away from developing new systems to operating existing ones. The shift to contractor-furnished systems operations is also exacerbated by the government's inability to pay competitive wages to hire and retain qualified operating personnel.

EXHIBIT II-2



C

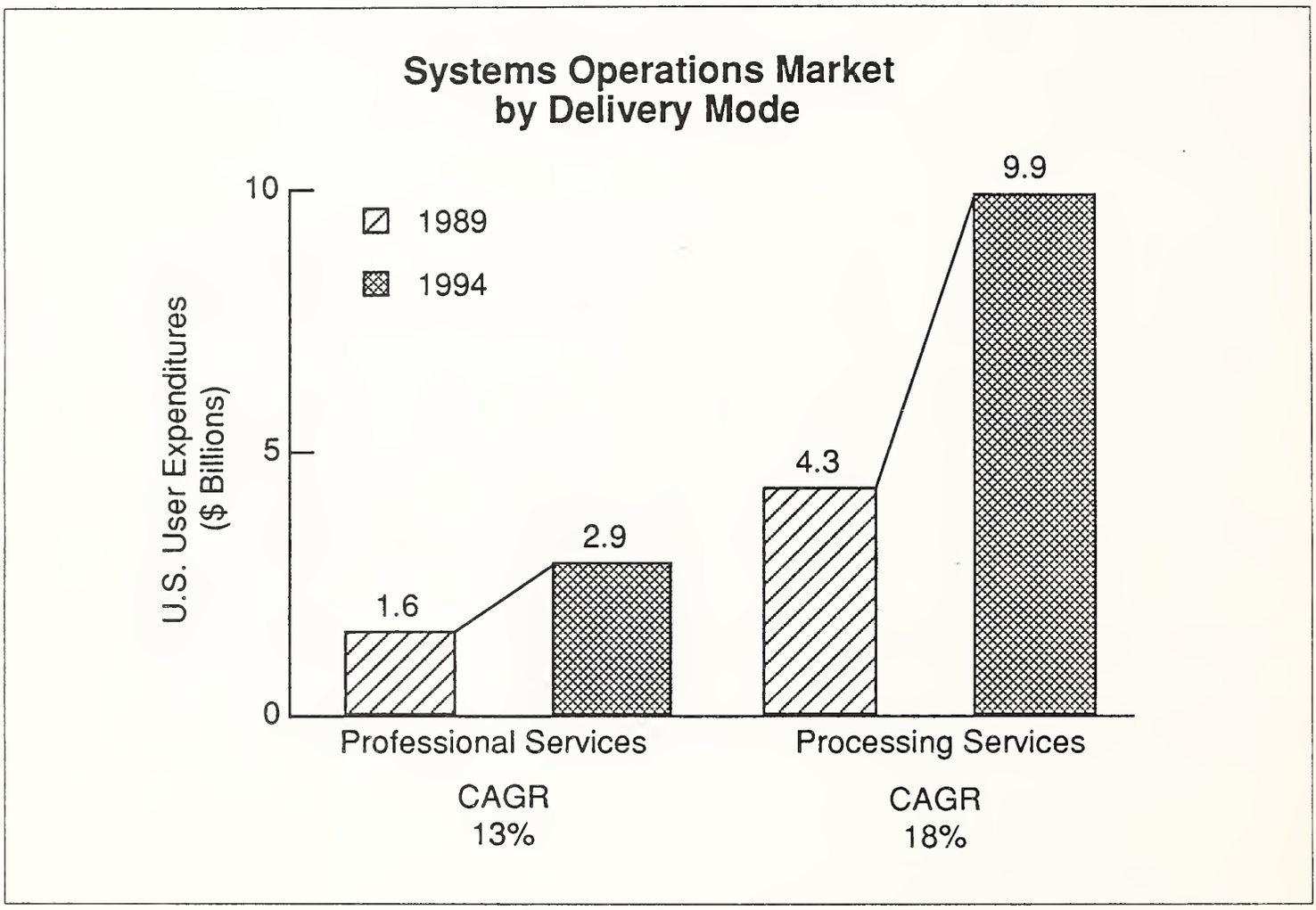
Trends in Systems Operations Services Offerings

Systems operations can be provided by either of two submodes: processing services or professional services. The forecast for these two modes over the forecast period is shown in Exhibit II-3.

In the professional services mode of systems operations, vendor-provided personnel plan, manage, and operate client-owned equipment. Professional services is the slower growing of the two modes, with a compound annual growth rate of 13%. This operating mode is much more prevalent in the federal market, where it represents over 50% of user expenditures for systems operations services in 1989.

Under the processing services mode, the vendor provides the full range of planning, management, and operations services for the client using vendor-owned equipment on vendor or client premises. This mode of systems operations is the faster growing of the two, at a compound annual growth rate of 18%. It is clearly the dominant mode of service in the commercial market, where it represents over 85% of end-user expenditures in 1989.

EXHIBIT II-3



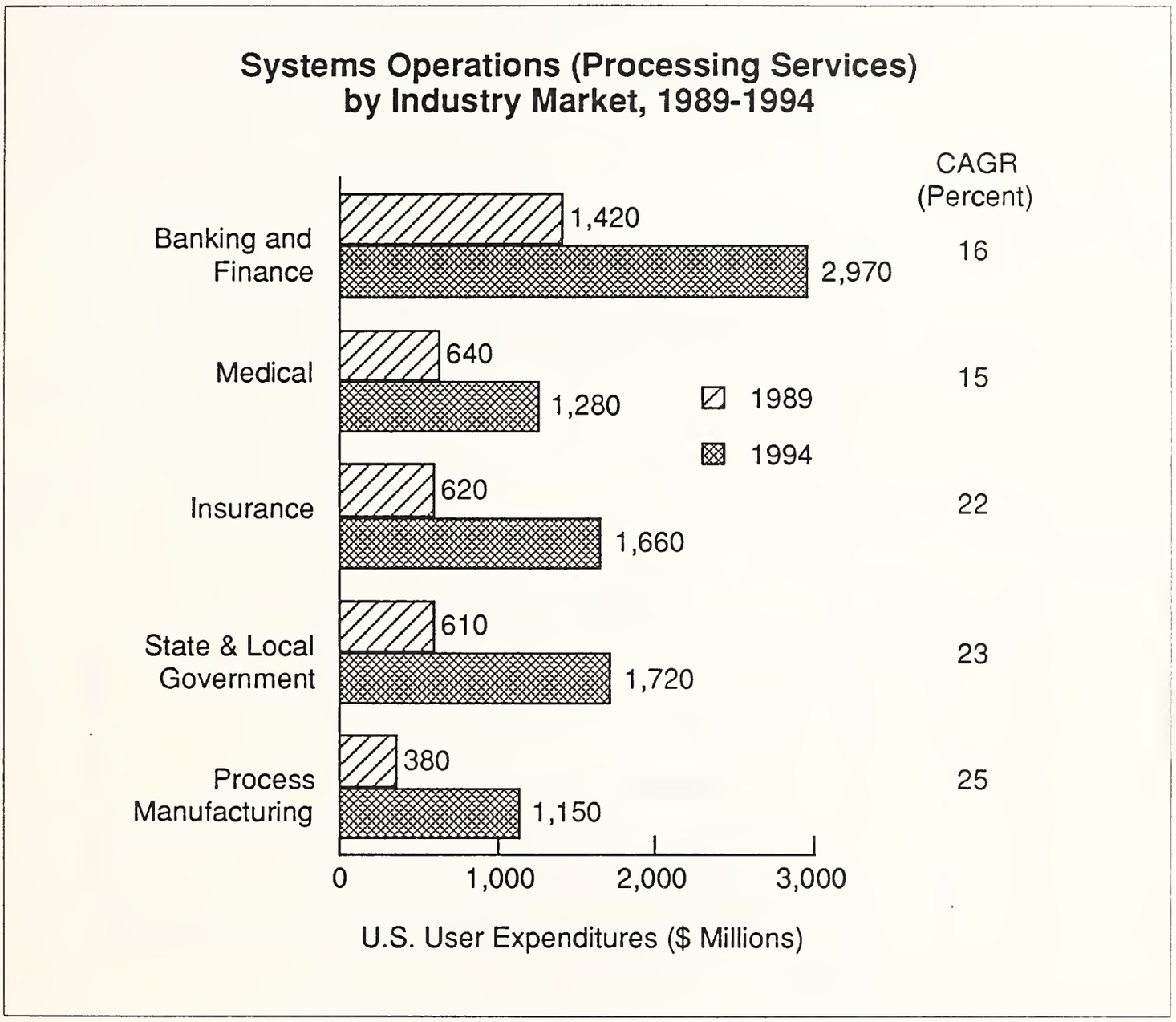
D

Forecast by Industry Sector

Vertical industry forecasts for end-user expenditures for processing services systems operations are illustrated in Exhibit II-4. The identified expenditures appear to be focused in five vertical industry markets, where over 75% of end-user spending occurs.

The largest vertical market in 1989, and through 1994, will be in the banking and finance industry which represents over 30% of 1989 user expenditures. The industry is being driven by competition and is operating on narrow margins and limited resources. The growth rate of systems operations in this industry is relatively modest, 16% annual growth, as the market is relatively mature and struggling with problems of the savings and loan crisis.

EXHIBIT II-4



The medical industry, the second largest systems operations vertical market in 1989, depends on information systems to monitor and control patient care, provide administrative and billing support, and satisfy government reporting requirements. Forecasted growth in this market is also modest, 15% annually; and it will drop to fourth largest in 1994.

The third through fifth largest vertical markets in 1989 are insurance, state and local governments, and process manufacturing respectively, with compound annual growth rates ranging from 22 to 25%, all in excess of the overall commercial growth rate of 17%. The insurance and

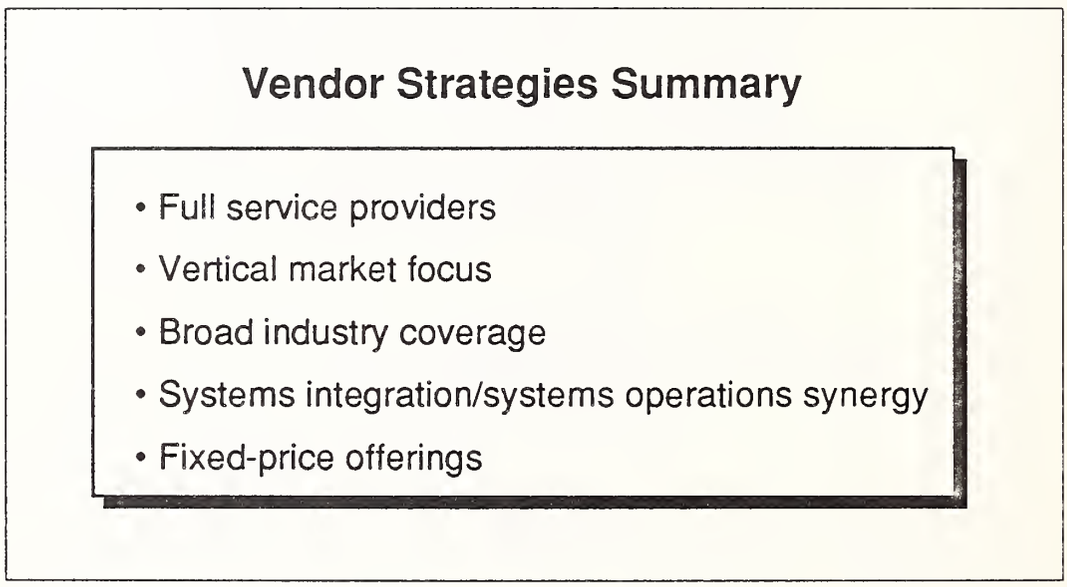
process manufacturing markets' growth are being driven by the recognition that many information and administrative processing applications, like claims processing in the insurance industry, are nonstrategic and can be easily off-loaded to vendors. State and local governments suffer from many of the same problems as the federal government, and their focus is on getting the job done, not who does it—a perfect setting for systems integrators and systems operators.

E

Vendor Strategies

Several vendor strategies, identified in Exhibit II-5, have emerged in the systems operations market. Products and services are blurring in the information services industry; and as they do, vendors are positioning themselves to capture as much of the end-user IS expenditures as possible. To do this, there is a clear trend for vendors to provide a full range of services, from business consulting through systems operations. Most of the systems operations firms claim to provide system integration services as well as a full range of other information services.

EXHIBIT II-5



Vendors practice two basic approaches in the systems operations market. Some focus on narrow vertical markets, providing added value through front-end business consulting, quality industry application software packages, and a variety of operating environments. Other large vendors tend to focus on broad industry coverage and provide attractively priced services through leveraging equipment and skills in large data centers, or through remote operations.

Systems integration projects establish confidence in outsourcing and a relationship that can lead to a long-term operations contract. Successful long-term systems operations contracts establish an environment where it is easier to sell systems integration. Vendors having both capabilities can establish and retain long-term relationships with their clients.

Many vendors, particularly those that understand how to manage and leverage technology and productivity, prefer fixed-price contracts. Investment in technology and advanced operating techniques can result in excellent margins over long contractual periods.

F

Leading Vendor Market Shares, 1988

EDS is the leader in the systems operations market, as shown in Exhibit II-6, with a 16% market share. EDS' experience in the facilities management business goes back to the mid-1960s, and it has developed a strong set of capabilities that it offers to a broad set of vertical markets. It provides systems integration services as well as professional services and systems operations. EDS has even larger systems operations revenues flowing from its parent, General Motors, which supplies additional operating resources, buying power, and experience that it can leverage to provide low-cost service to noncaptive clients.

EXHIBIT II-6

Leading Vendor Market Shares, 1988

Vendor	Market Share (Percent)
EDS	*16
Computer Sciences	5
McDonnell Douglas	4
Shared Medical Systems	3
Boeing Computer Services	3
Systematics	3

* Non-GM

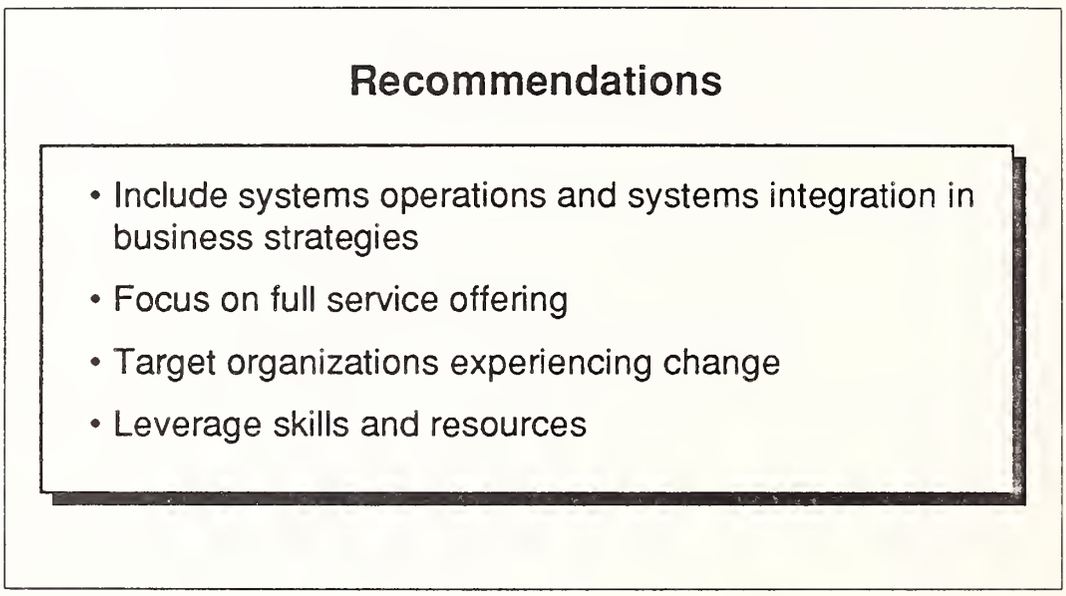
Computer Sciences' systems operations has been focused primarily on federal and state and local governments and insurance markets. McDonnnell Douglas' recent divestitures, including TYMNET and its shared hospital services offering, will drop its market ratings in 1989, although it still retains systems operations activities focused at transition management and insurance processing. The remaining three vendors in the top six, Shared Medical Systems (SMS), Boeing Computer Services (BCS), and Systematics, have narrower focuses. SMS is focused at the medical industry, Systematics on the banking and finance industry, and Boeing at network management, image and document processing, and computer-aided design and manufacturing applications.

G

Recommendations

Systems operations, similar to systems integration, has been recognized as an important vehicle for gaining and retaining client control. As a result, it is receiving renewed interest and focus by the vendor community. All information services vendors should, as indicated in Exhibit II-7, consider its impact on their business strategies. Vendors should be able to provide or have access to a full range of service offerings, including systems operations and systems integration. If these capabilities are not available internally, then alliances or partnerships should be established to provide them.

EXHIBIT II-7



Organizations that are experiencing change, either as a result of mergers or divestitures, or the need to respond to competition are excellent targets for systems operations. Vendors should focus sales activities on these prospects; establish a systems operations strategy that will leverage existing skills and resources; and not try to break new ground with a system operation strategy that is not synergistic with current organizational focus and capabilities.

Systems operations will be an important information service offering in the 1990s. Vendors should posture their organizations to participate in its growth and profits.

III

Market Trends

A

Introduction

As a prelude to discussing systems operations vendors and the market forecast, it is useful to identify and analyze the key forces and trends that are driving the growth of the information services market. Some of the forces and trends reviewed in this chapter are common to the overall information services industry, while others focus on the systems operations market.

B

Information Systems and Services—Major Issues

The major issues that are driving the information systems and services industries are identified in Exhibit III-1.

EXHIBIT III-1

Information Systems Major Issues

- Rising management expectations
- User demands for increasingly complex solutions
- Management of the technology investment
- Integration of data/technology/applications
- Delivery of mission-critical applications

Senior corporate management is expecting a greater business contribution and more productivity out of their information systems organizations than ever before. These expectations focus on getting more work accomplished by their IS organizations while carefully monitoring or reducing their IS expenditures.

Users have become quite sophisticated in their understanding of the application of information processing to their business needs. Department managers and supervisors seek complex solutions to complex business problems that have evolved as a result of deregulation, global competition, and fundamental changes to the structure of the U.S. and world economies. They look to information technology and either internal or external information services organizations to develop the solutions they need to address this new and evolving environment. Their problem and that of their internal IS organizations is exacerbated by the heavy investment in existing incompatible products and the wide range of available new information processing, communications equipment, and software.

The current business inventory of information processing and communications equipment and software, as well as staff, is considered a major investment by most businesses. Executive management is looking to IS management to oversee that investment and to identify those areas where investment of internal resources is important to the success of the core business. Any nonstrategic areas are candidates for outsourcing through systems operations.

Integration of data, technology, and applications is a way of stating that management and users are looking for total solutions for their information needs. Vendors and internal IS organizations recognize this and no longer promote products and technology, but rather focus on providing integrated solutions.

Finally, IS solutions that support the core business of the enterprise are being recognized as key weapons in many vertical markets. These "mission-critical" systems not only help run the business, but provide the basis for a competitive advantage.

C

Key Information Services Trends for the 1990s

There are a number of trends in the information industry that will influence and drive vendor actions and offerings in the 1990s. Five major trends are identified in Exhibit III-2 and discussed below.

EXHIBIT III-2

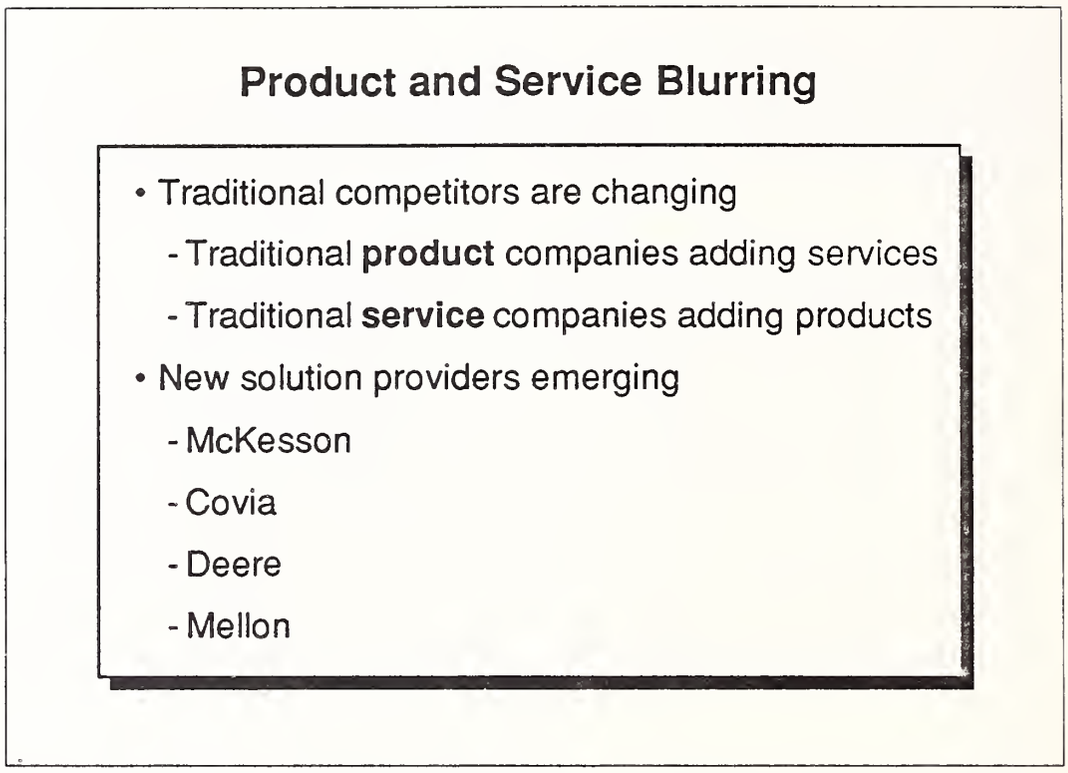
1. Product and Service Markets Blurring

The vendors in the information services industry are expanding their product and service offerings. As indicated in Exhibit III-3, computer and communication equipment vendors are adding a range of complementary services to their product offerings. Information services vendors are adding equipment offerings through acquisitions or by participating as value-added resellers (VARs) for equipment manufacturers which broaden their service offerings.

Specifically, IBM, Digital Equipment, NCR, and Unisys have established or expanded professional services offerings to provide complete solutions through systems integration. Professional services firms such as Andersen Consulting and the other "Big 6" accounting firms have added software products to their professional services offerings. EDS, a systems operations firm, has purchased part interest in Hitachi's U.S. computer equipment operations.

A full range of new participants is emerging in the IS market. Often these are companies that have decided to market their internal experience to others. Examples are United Airlines' subsidiary Covia, Deere's Technical Services, McKesson, and Mellon Bank.

EXHIBIT III-3

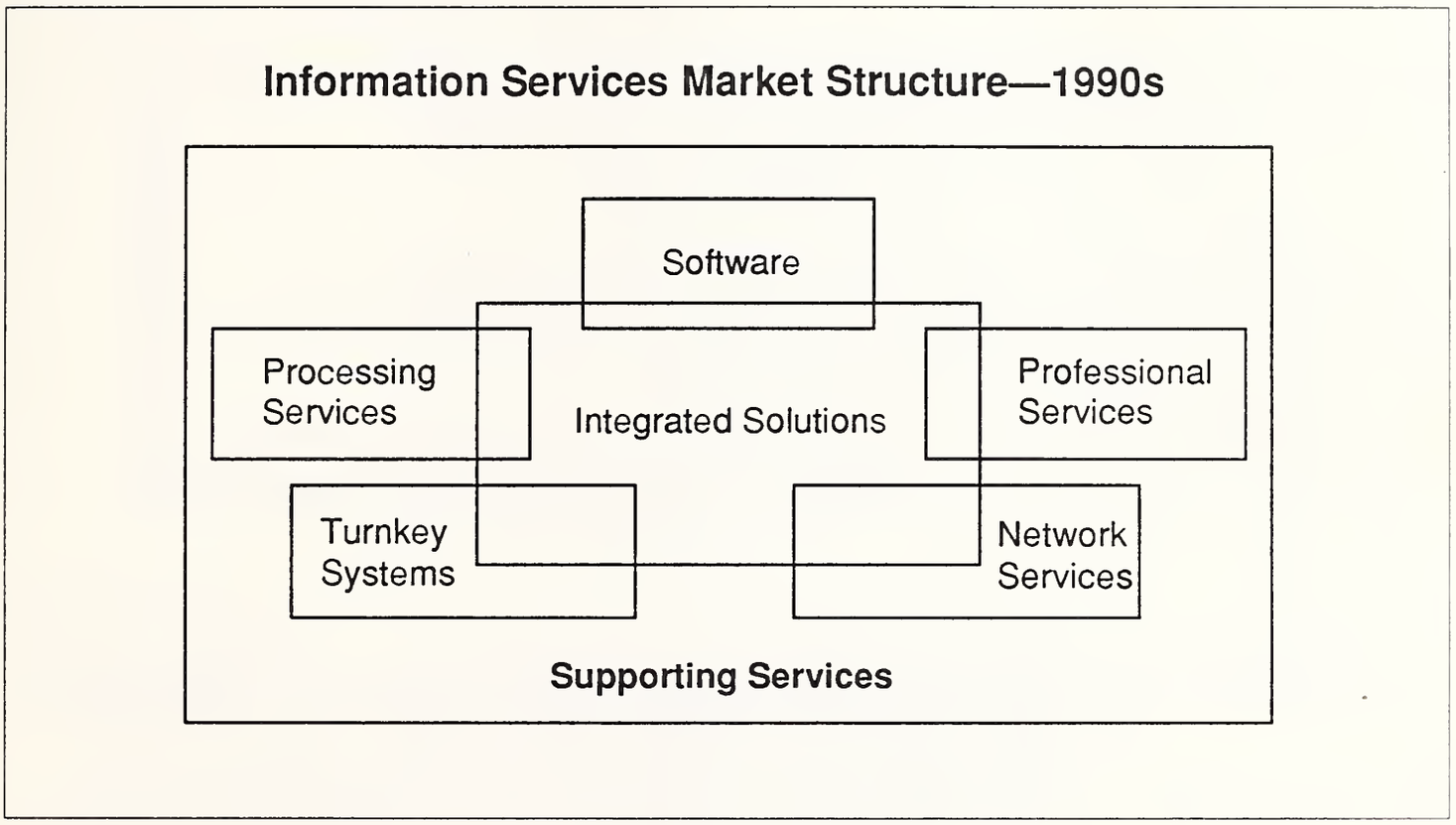


2. Changing Market Structure

The structure of the information services industry is also changing, as shown in Exhibit III-4. The market has evolved from one first driven by equipment, then by software, and now by fully integrated solutions. A full range of supporting services is required to provide these integrated solutions, which include front-end business consulting, needs analysis and requirements definition, systems architecture, systems implementation, end-user training, and, often, on-going systems operations after the system is installed.

Given the size and scope of these projects, no single vendor has all the resources and capabilities to provide the integrated solution and on-going supporting services alone. Vendor-to-vendor relationships seem to provide the answer to this dilemma, and vendors are establishing alliances, partnerships, merging, or buying ownership positions in others to strengthen their offerings. These relationships, alliances, and ownership positions will provide the vehicle for the "integrated solutions and supporting services" image in the decade of the 1990s.

EXHIBIT III-4



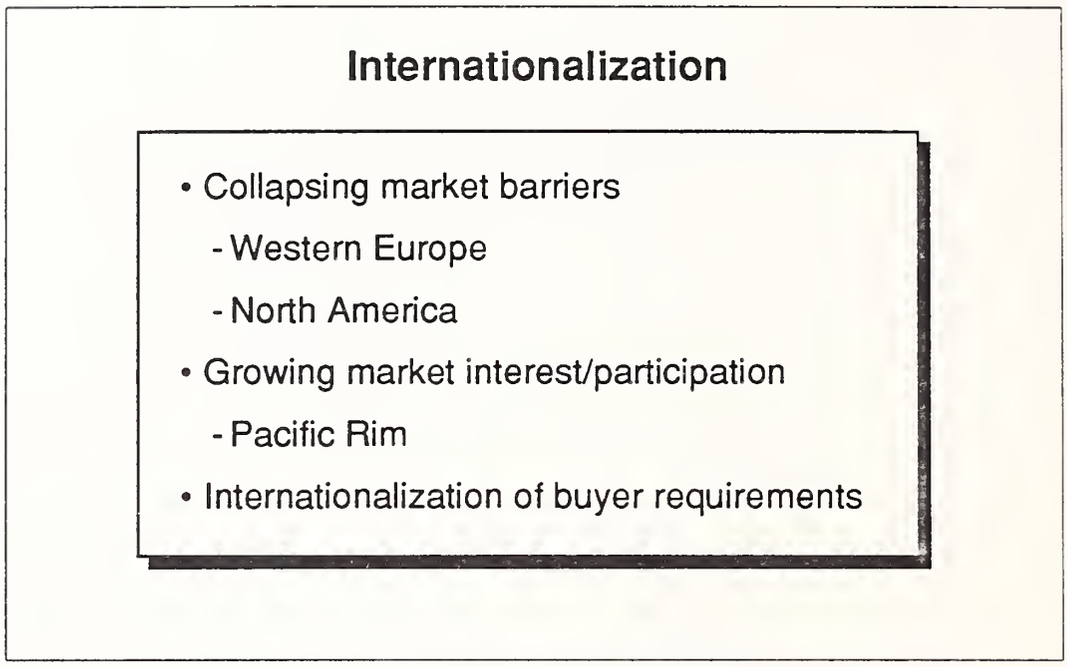
3. Internationalization

A dominant trend of the 1990s will be that information services markets will be international in scope. Like the manufacturing and financial markets, this market is broadening the scope of its products and services, being driven by changes in the world economy, changes in market organization, legal considerations, and actions of both vendors and buyers.

As indicated in Exhibit III-5, market barriers in two key markets—Western Europe and North America—are breaking down. The 1992 agreement between the members of the European Economic Community will ease the movement of goods among member countries. In North America, trade barriers between Canada, Mexico, and the U.S. are diminishing, with an agreement already established between the U.S. and Canada.

Vendors from the Pacific Rim countries continue to develop and manufacture quality information processing and communications equipment. As they see the "solutions" market unfold, they will look to systems integrators and systems operations firms as distribution channels for their products in Europe and the Americas.

EXHIBIT III-5



Customers buying information services and products are requesting in their specifications capabilities that support international operations. These international capabilities typically include support for internationally accepted communications protocols, networks of systems that support operations and communications across country and continental borders, and most importantly, post-sale support in Western Europe and Asia.

4. Standards

Internationalization of product and service offerings implies standardization between vendors and across borders. Buyer needs for integrated equipment and software solutions are also forcing adoption of standards in vendor product lines. Coalitions between the leading equipment vendors and leading software and services vendors provide yet another driving force for standards.

Although the demand for standards is real, there is substantial risk for vendors who abandon their existing proprietary solutions to embrace new industry-wide standards. Vendors tend to rationalize the validity of their solutions rather than offer and support more than one standard.

Progress in this area will occur and be driven through vendor alliances and through software, rather than equipment. An example of this approach is IBM's current strategy to acquire equity positions in software vendors to strengthen its SAA standards. Another example is its CASE and depository products announcements which should promote standards in program development and reusable program code.

5. Vendor Reactions

Finally, vendors are expected to react to these trends, and a number of full service vendors or multivendor alliances will emerge. These firms or alliances will be able to provide services that range from "front-end" business consulting to post-installation systems operations.

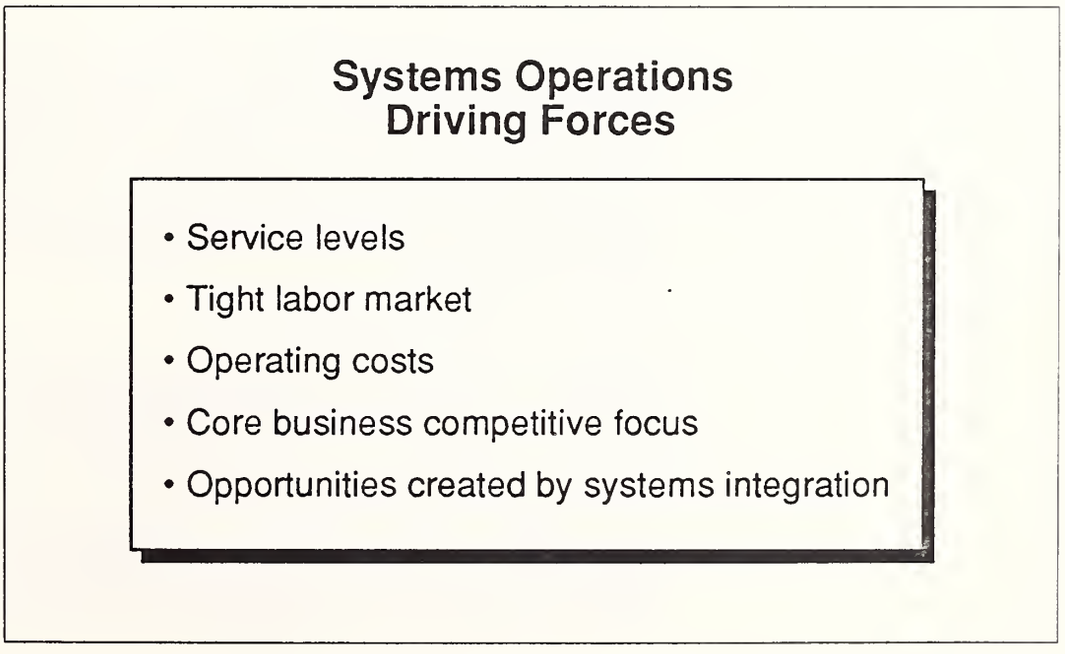
Two types of vendors can emerge with this full range of capabilities: vendors that focus in depth on a single industry and provide comprehensive coverage for that industry, and larger cross-industry coverage firms that focus more on the application of technology and depend on alliances with vendors with specific industry skills when unique industry knowledge is required. Both types of firms will have access to the latest technology through ownership or alliance with equipment vendors, and possess or have access to all of the skills necessary to apply this technology to their client requirements.

D

Systems Operations Driving Forces

The five factors in Exhibit III-6 were identified, through INPUT's surveys of users, potential users, and vendors, as the major forces that are driving the growth of the systems operations market.

EXHIBIT III-6



As would be expected, users that have decided to use, or would consider using, systems operations are looking to outsourcing for better or more flexible service. Service levels are expected to go beyond the traditional measures of systems availability and response times, to services areas such as applications maintenance, application development, and the

availability of backup and disaster recovery facilities. Users are not just looking for someone to operate their existing applications, but rather to provide a full range of services to plan, develop, control, and manage information processing for them.

Tight labor markets are also driving the growth of systems operations. Finding, hiring, and retaining qualified personnel in a competitive labor market is difficult and expensive, both in terms of cost and management time. Escalating labor costs are a major driver of overall data center costs, and business is looking to systems operations firms as a cost-effective alternative.

The focus on improving the competitiveness of the core business is also driving the demand for and acceptance of systems operations. Internal information systems organizations are being directed by management to focus on identifying and managing the development of systems solutions that will make their businesses more competitive. There is a growing recognition that computer systems operations activities do not yield competitive advantage, but investments in new application developments do. As a result, IS executives are transferring the planning and management of existing operations activities to outside vendors and focusing internal IS resources on identifying and developing strategic business solutions.

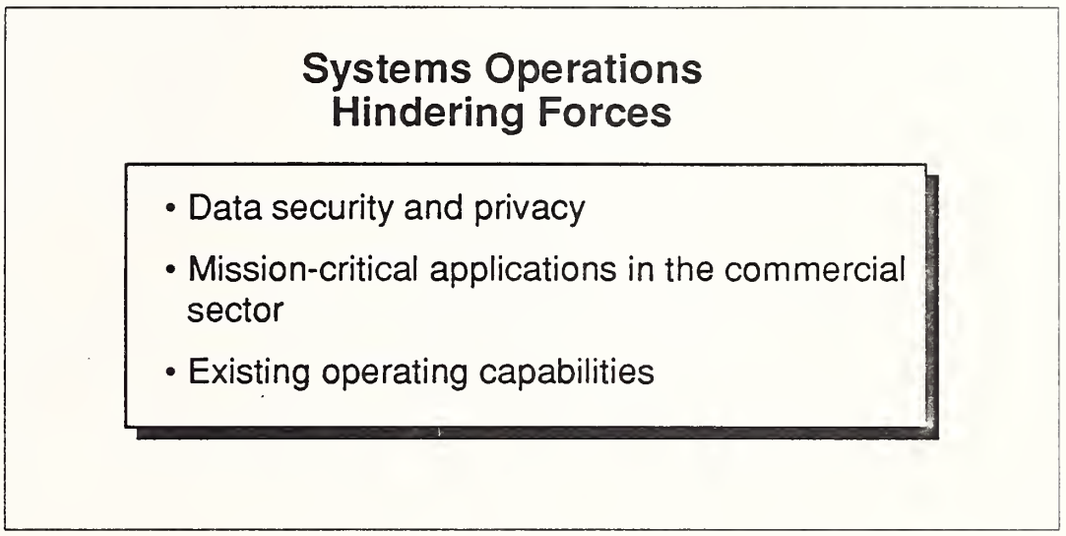
Finally, the acceptance of systems integration as an alternative to internal systems solution development has resulted in increased acceptance of outsourcing. Businesses that have successfully used an integrator to develop a system appear more willing to consider an outside vendor for systems operations. In fact, a number of systems integration contracts INPUT examined for this study included systems operations in the original contract.

There are also negative forces that are restraining the growth of systems operations. The three that were identified most often in the surveys that support this study are identified in Exhibit III-7.

Nine of 18 systems operations vendors interviewed said that businesses are reluctant to trust the privacy and security of organization data to an outside vendor. This is particularly true when the processing is done away from the client's premises.

Eight vendors said that if the application was considered "mission-critical," clients were clearly more reluctant to transfer operational responsibility to a systems operations vendor. Commercial user organizations agreed with this, but public sector users disagreed. They considered systems operations to be an important vehicle for providing mission-critical application service to their clients.

EXHIBIT III-7



Finally, there are a number of businesses that have made significant investments in resources, have existing operations infrastructures, and are therefore unwilling to consider systems operations. They believe that they have efficient operations capabilities and that a systems operations firm cannot know their business as well, serve their customers as fully, or operate their systems as cost-effectively as they do.

Market Analysis and Forecast

IV

Market Analysis and Forecast

Systems operations has received renewed interest in the last year. An increasing number of organizations are looking to information services vendors to provide the planning, management, and day-to-day operations of their information processing activities. In addition, a number of successful information services and product providers have added or greatly increased their offerings and activities in this growing market.

In this chapter, the systems operations market will be defined, the structure and components of the market will be sized and forecasted, and the key forces driving and hindering the growth of the market will be described. The first step is to define systems operations and the market structure.

A Market Structure

Systems operations is an information services delivery mode that has been defined by INPUT as an expansion of the offerings that were earlier defined as facilities management.

1. Market Characteristics

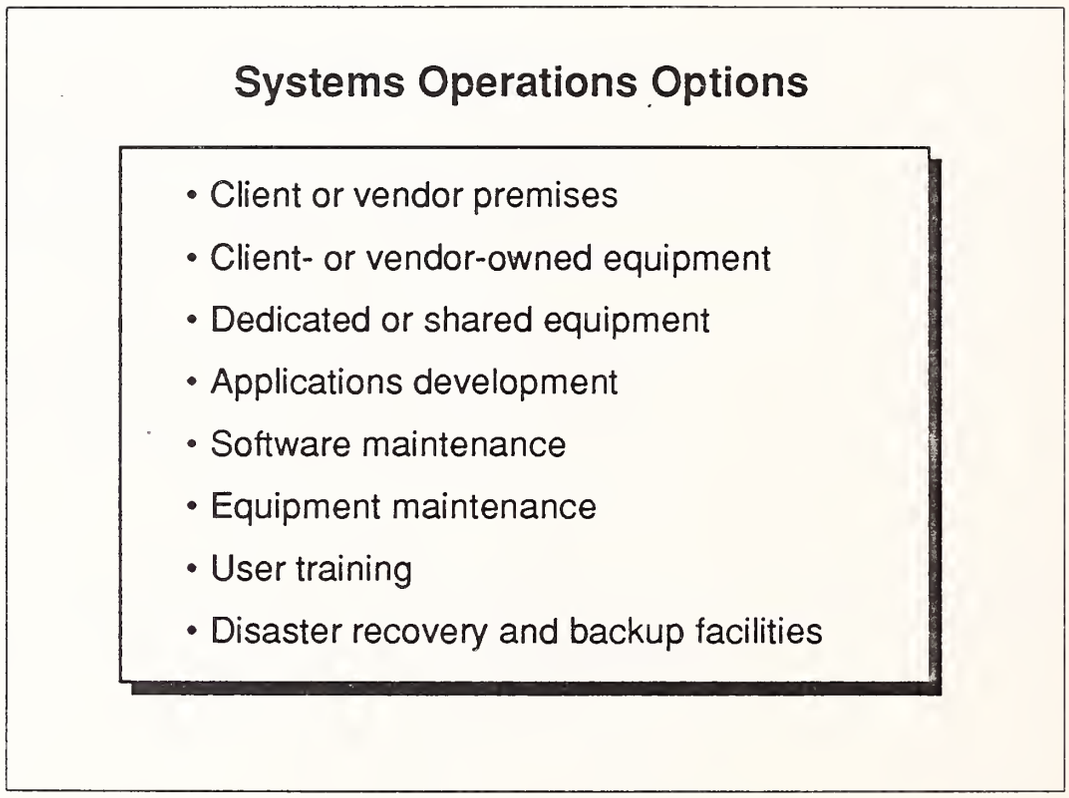
Current offerings are no longer limited to the traditional day-to-day operations of the client's data processing equipment. These information services have been expanded to a complete set of offerings in which the vendor can become responsible for the total planning, development, and maintenance of client applications, or become responsible for entire information systems activities for a functional area, operating division, or entire client organization. In some cases, the systems operations firm becomes a "fiscal agent" for the client and actually assumes contractual authority to perform complete functional activities for the client. For

example, EDS has assumed contractual responsibility for the complete claims processing, coordination of benefits, and utilization and review reporting for a number of state medicaid and medical assistance programs.

2. Products and Services

Systems operations firms offer a broad range of options and services to their customers. Exhibit IV-1 lists a number of these, including equipment ownership, operating location, and environment options that are provide by most vendors. Systems operations firms services range from applications development and maintenance to disaster recovery and backup facilities.

EXHIBIT IV-1



Most of the vendors that INPUT surveyed indicated that they also provide systems integration services for their clients. This suggests that most systems operations firms possess, or have access through alliances or partnerships to, the full range of products and services identified in Exhibit IV-2. It also reinforces the "full service vendor" industry trend that was identified in Chapter 3.

EXHIBIT IV-2

Products/Services in Systems Integration Projects

- Equipment
  - Information systems
  - Communications
- Software products
  - Systems software
  - Applications software
- Professional services
  - Consulting
    - Feasibility and tradeoff studies
    - Selection of equipment, networks, and software
  - Project management
  - Design/integration
    - Systems design
    - Installation of equipment, networks, and software
    - Demonstration and testing
  - Software development
    - Modification of software packages
    - Modification of existing software
    - Custom development of software
  - Education/training and documentation
  - Operation and maintenance/systems operation
- Other miscellaneous products/services
  - Data processing supplies
  - Processing/network services
  - Data/voice communication services

Systems operations can be provided through two of the information services delivery modes that INPUT tracks and monitors; processing services and professional services. When systems operations is provided through the professional services mode, the offering is focused at providing professional personnel to run client-owned equipment, generally on client premises. The processing services mode is the more prevalent and as will be seen later is a significantly larger market. Systems operations-processing services is performed on vendor-owned equipment and can be provided on customer or vendor premises, on equipment that is dedicated to a single client or shared among multiple clients.

B

Market Forecast

The growth of the systems operations market is driven and hindered by a number of forces that were described in Section D of Chapter III.

The forecast of the systems operations market is provided in annual user expenditures. The forecast is limited to actual user expenditures for systems operations contracts. The user expenditures for services provided within these contracts to plan for, manage, operate, fix, and enhance the clients applications and to operate and repair the information and telecommunications equipment are included. Vendor-owned equipment expenditures, while not explicitly identified, are included in the cost of systems operations service paid for by the vendors clients, and are therefore implicitly included in the forecast. Client expenditures to purchase equipment that it will own but that is operated by an SO vendor are not included.

Expenditures for explicitly defined systems integration contracts are not included in the forecast. Systems operations activities that are included in systems integration contracts are included in INPUT's systems integration forecast and excluded from the systems operations forecast. Follow-on systems operations contracts, after the initial systems integration contract is completed, are included in this forecast.

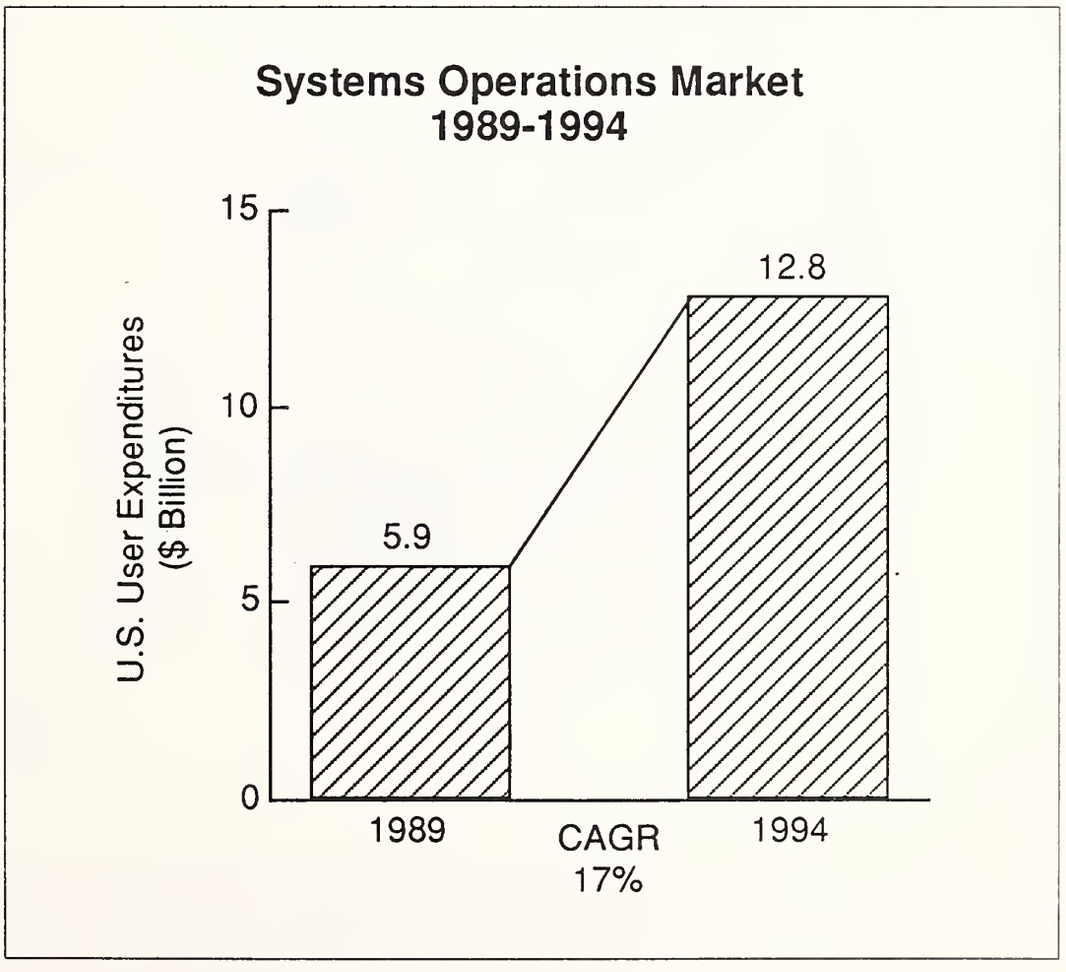
As indicated earlier, there has been renewed interest in systems operations from both user and vendor perspectives. Major U.S. corporations have, over the last year, increasingly made the decision to outsource the operations of their information processing operations. At least two major vendors, including IBM, who have not previously participated to any extent in this market in the past, have not only announced their intent to participate, but have already signed contracts with significant customers.

IBM's formal entry into the market will most likely cause businesses that have not seriously considered systems operations in the past to examine it more closely. IBM's sizeable position in the information market has historically influenced user acceptance of products or services. For

example, when IBM entered the personal computer market, the personal computer became much more widely accepted, and market expansion accelerated. Once industry recognizes that systems operations is a strategic IBM offering, accelerated acceptance and market expansion can be anticipated.

INPUT's forecasting methodology and research for this study are described in Chapter I of this report. Based on this research, which includes a clear recognition of the renewed interest in this market as described above, INPUT forecasts U.S. user expenditures for systems operations for the commercial and federal markets to reach $5.9 billion in 1989. Growing at a compound annual rate of 17%, expenditures will reach $12.8 billion in 1994, as illustrated in Exhibit IV-3. The various subdivisions of this forecast are discussed below.

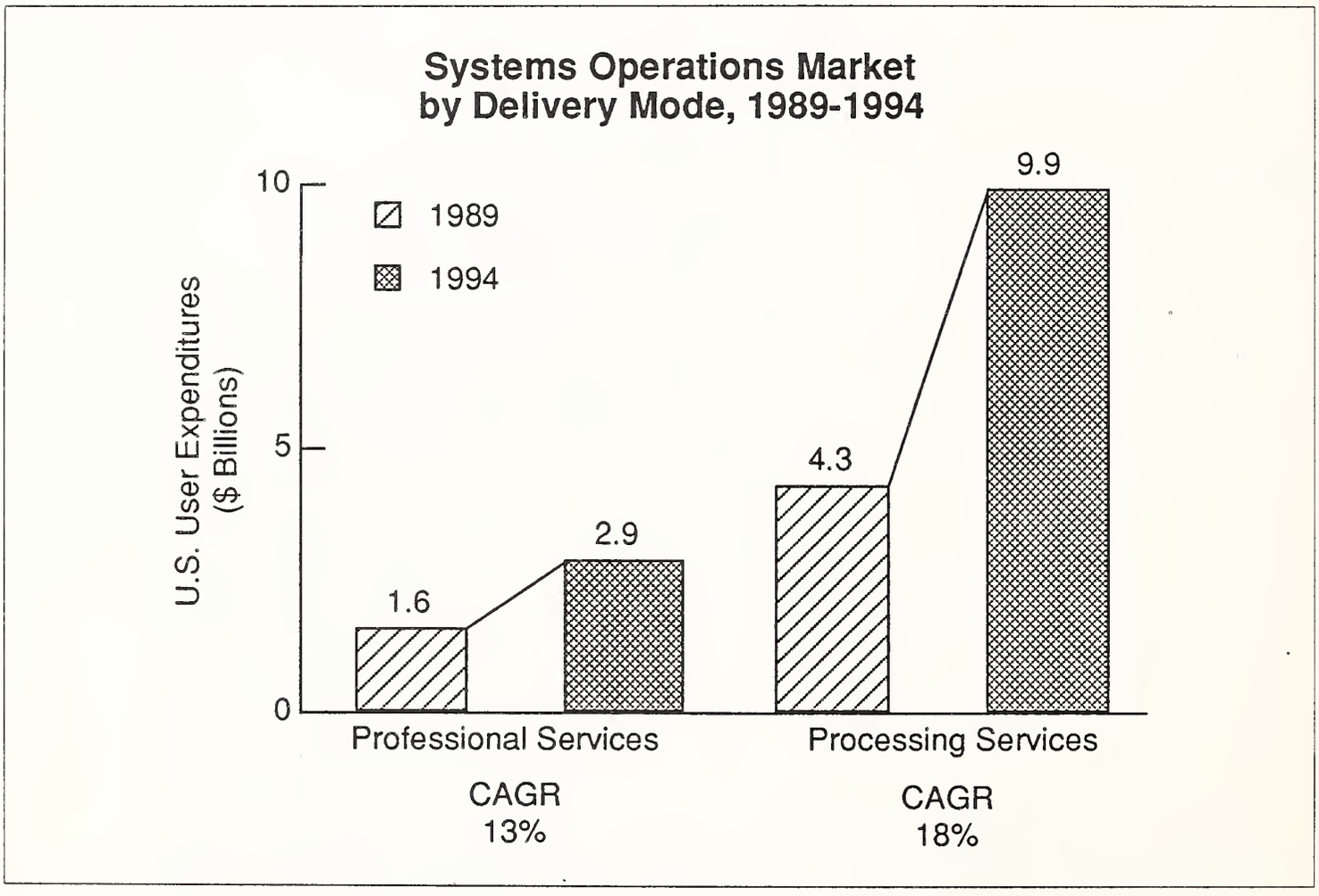
EXHIBIT IV-3



1. Processing Services versus Professional Services Markets

Exhibit IV-4 demonstrates the differences in size and growth rates between the two systems operations delivery modes. Systems operations-professional services, the market where vendors provide professional services to operate client-owned equipment, reached $1.6 billion in 1989. Growing at a compound annual rate of 13%, this market will reach $2.9 billion in 1994.

EXHIBIT IV-4

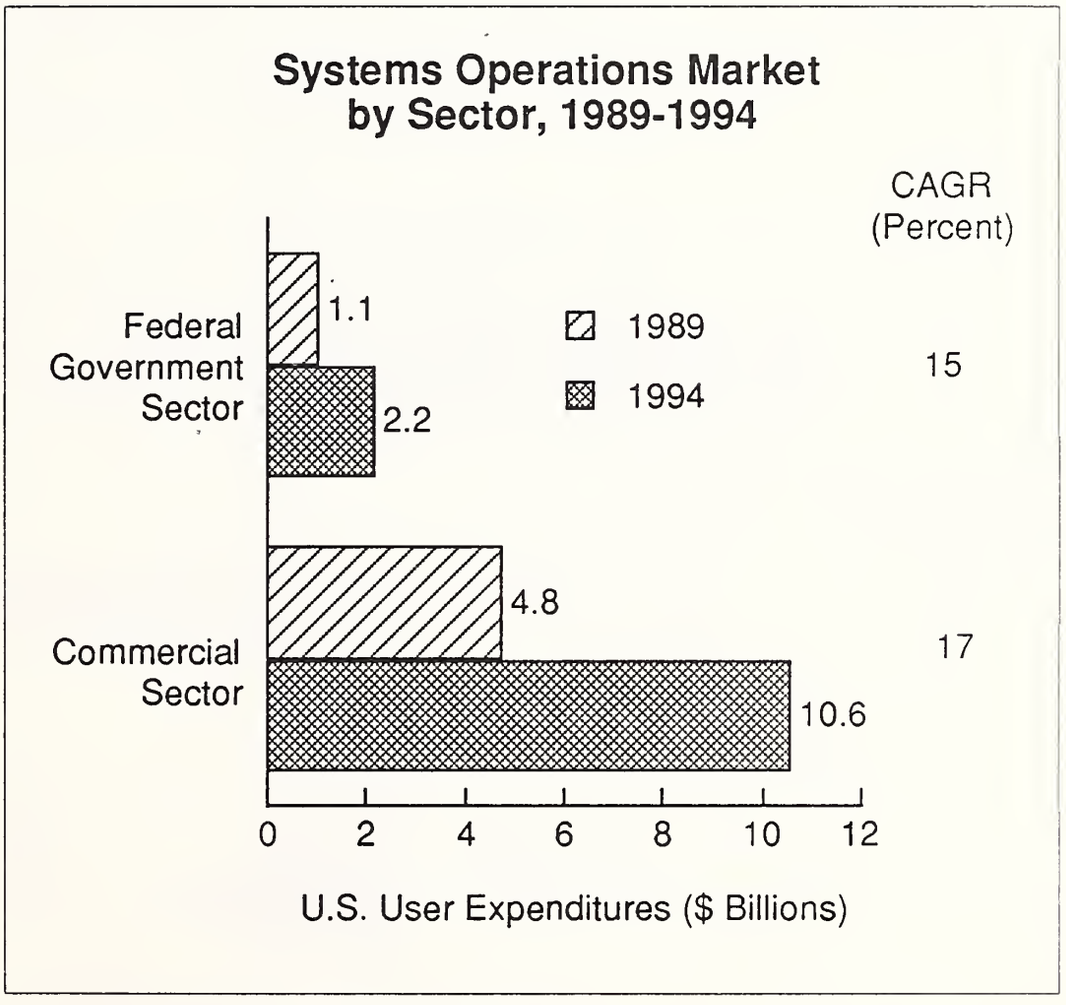


The processing services-systems operations market, where operations are provided on vendor-owned equipment, will be over two and one-half times as large as the professional market in 1989, at $4.3 billion.. Growing at a CAGR of 18%, the processing services market will reach almost three and one-half times the professional services market in 1994, at $9.9 billion. Comparing the size of these markets is somewhat unfair, as the professional services market contains no equipment expenditures, while the processing services expenditures paid by users include the recovery cost of the vendor's ownership of equipment upon which service is provided.

2. Federal versus Commercial Expenditures

A number of changes have occurred in both the federal and commercial systems operations since 1988. The renewed interest in the commercial market has already been described. Systems operations spending in the commercial market will be $4.8 billion in 1989. The growth of this market is forecasted at a annual compound rate of 17%, growing to $10.6 billion in 1994. This growth is illustrated in Exhibit IV-5.

EXHIBIT IV-5



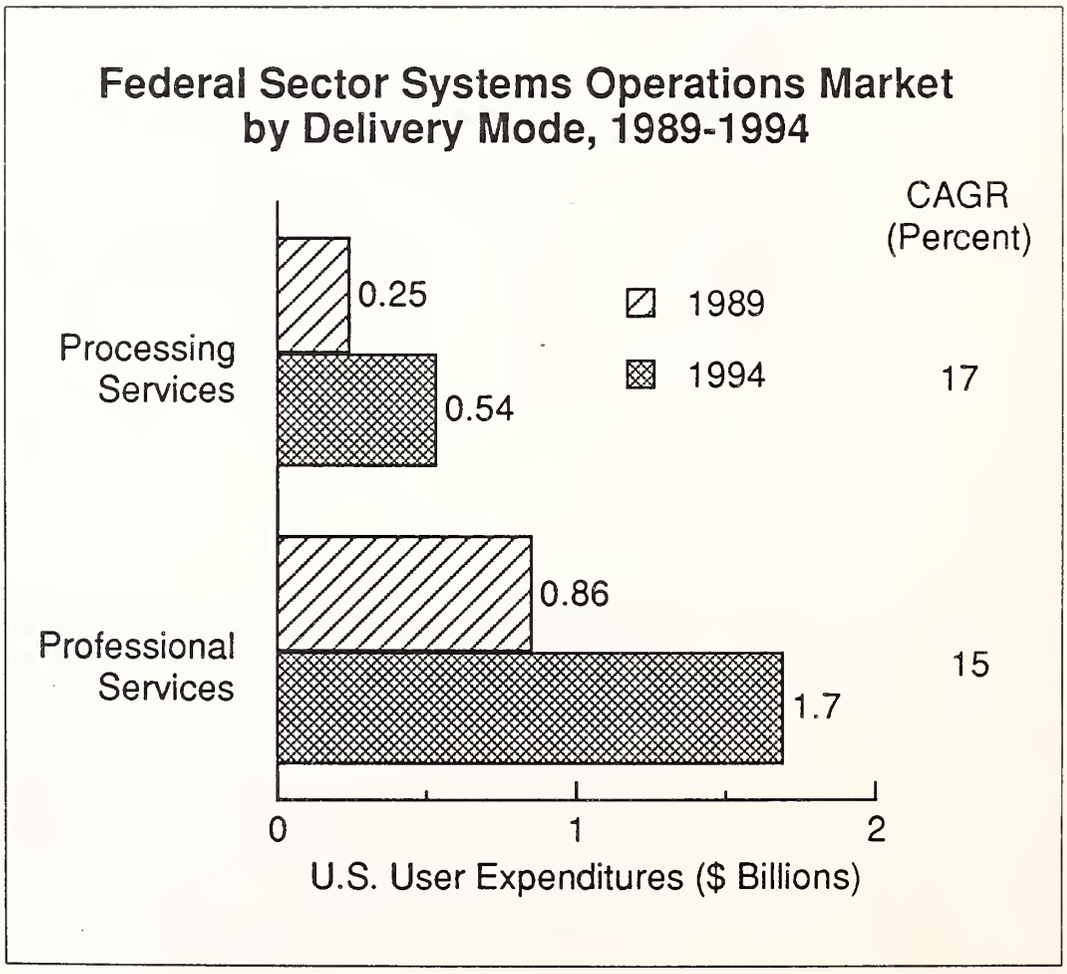
Changes have also occurred in the federal market that directly impact the market for systems operations. At the request of Congress, the federal agencies and departments procured a significant amount of equipment over the last few years to modernize their information processing capabilities. These procurements included systems implemented through systems integration contracts, as well as large purchases of equipment implemented directly by the agencies to modernize existing application environments. The federal budget deficit and rigid budgetary constraints have made it difficult, if not impossible, for agencies and departments to hire and retain the necessary skills to operate these new modern systems.

During the most recent budget cycle, systems operations was recognized as a solution to this dilemma, and the planned spending for these services was changed significantly. The 1989 expenditures are now forecasted to be $1.1 billion, growing to $2.2 billion in 1994, representing an annual compound growth rate of 15%. This represents a dramatic change from the government spending plans in 1988 which reflected a compound growth rate of only 8%.

There is another important characteristic of the federal systems operations market that needs to be discussed at this point. As mentioned earlier, at the request of Congress, the federal government made significant equipment purchases to modernize its information systems capabilities. The government modernization strategy included direct equipment purchase rather than leasing or other financing alternatives.

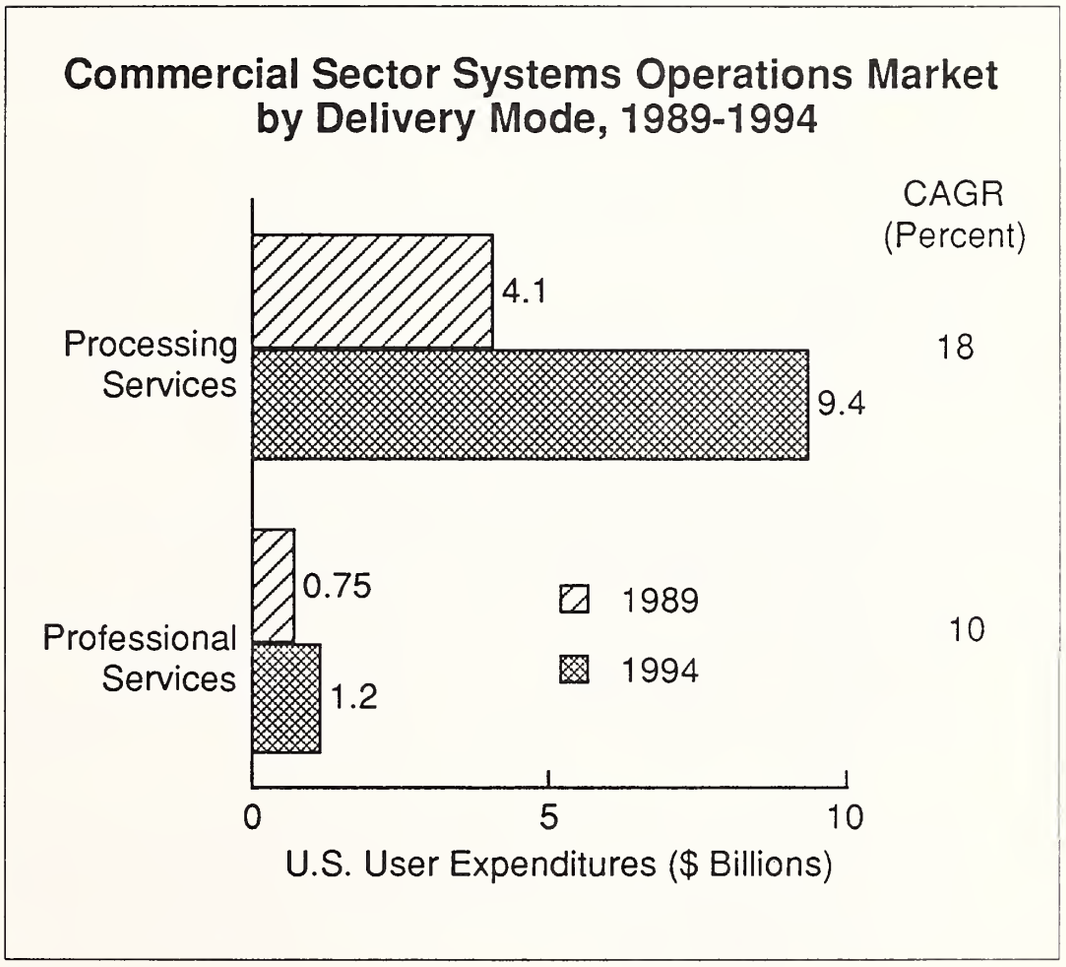
As a result of this strategy, the federal government profile for systems operations is unlike the profile of the commercial market. To operate this large base of purchased equipment, it spends three times more for professional services-based systems operations contracts as it does on processing services contracts for services on vendor-owned equipment. This relationship is demonstrated in Exhibit IV- 6.

EXHIBIT IV-6



The commercial market forecast is presented in Exhibit IV-7. In this market the processing services mode of operating is prevalent and is forecasted to grow much more rapidly, at an 18% CAGR as compared to the slower-growing professional services delivery submode, which is forecasted to grow at a 10% CAGR. This is an indication of the commercial sector's interest in offloading operations to the SO provider, to forestall further capital investments.

EXHIBIT IV-7



3. Vertical Industry Market Forecasts

The annual expenditures for systems operations processing services for 1989 through 1994 for all fourteen commercial vertical markets and the federal government are included in the table in Exhibit IV-8. The industries in this exhibit are ranked based on projected 1994 user expenditures. As seen in the exhibit, the top four industries—banking and finance, state and local government, insurance, and medical—represent 75% of the expenditures both in 1989 and in 1994.

EXHIBIT IV-8

Systems Operations (Processing Services) Market by Industry Sector, 1989-1994

Industry	User Expenditures ($ Millions)		CAGR (Percent)
	1989	1994	
Banking and finance	1,415	2,975	16
State and local government	610	1,720	23
Insurance	615	1,665	22
Medical	635	1,270	15
Process manufacturing	375	825	17
Federal government	250	545	17
Discrete manufacturing	115	285	20
Wholesale distribution	67	160	19
Education	73	117	10
Telecommunications	47	99	16
Transportation	47	83	12
Utilities	34	68	15
Other	17	53	25
Retail distribution	16	49	25
Services	13	31	20
Totals	4,330	9,950	18

Ranked by 1994 vendor revenue

Values greater than $100M have been rounded to the nearest $5M

The largest vertical industry opportunity for systems operations, representing 30% of the 1994 market, is banking and finance, where EDS and Systematics have established strong business positions. This industry market is growing at a CAGR of 16%, slightly slower than the total market, which is due to the current high level of systems operations penetration, retrenchment in the savings and loan industry, and brokerage industry consolidations. Midsize and smaller institutions are unable to make the necessary investments to develop and maintain information systems needed to support day-to-day operations as well as new product introductions. Systems operations firms, particularly those with prepackaged applications, provide attractive services that satisfy these needs.

The second largest industry market in 1994, state and local government, is forecasted to grow at 23%. This market is similar to the federal market, in that state, county, regional and local governments have the same limitations in their ability to pay competitive salaries to hire and retain the in-house skills required to develop, manage, and operate complex information systems. They are not as committed to an equipment purchase strategy as the federal government and therefore are more likely to use systems operations processing services.

The third largest vertical market is forecasted to be the insurance industry which will grow at a CAGR of 22% to reach $1.6 billion in 1994. EDS and CSC currently have prominent positions in this market, which includes a significant claims processing content. The medical vertical market, which is projected to be number two in expenditures in 1989, will slip to fourth in 1994, as a result of a healthy but comparatively low CAGR of 15%. Shared Medical Systems and HBO are prominent providers of systems operations in this vertical market.

There are several vertical industry markets that have relatively low projected spending levels for systems operations/processing services over the forecast period. These include wholesale and retail distribution, education, telecommunications, transportation, utilities, services, and the other industries. Together they represent only about 5% of the 1994 forecasted expenditures.

Insufficient data was available for forecasting the expenditures for professional services systems operations in each of the vertical industry markets other than the federal government, due to the relatively small size of each of these markets. The federal market portrayed in Exhibit IV-6 represents 52% of the professional services opportunity in 1989 and 59% in 1994. The balance of user expenditures, $745 million in 1989 and $1.2 billion in 1994, will be distributed across, but with likely emphasis in state and local government, the 14 commercial industries.

C
Users' Perspectives

This section of the market analysis focuses on the users' perspective of systems operations. This includes identification of the criteria that users consider when initially evaluating the SO alternative, as well as the final vendor selection criteria. User satisfaction with vendor performance, cost, and impact on management time is also examined.

To provide user perspectives of these and other issues and considerations, INPUT interviewed individuals at 24 current user organizations, 24 organizations that would seriously consider becoming users, and 20 organizations that would not consider these services. The analysis presented in this section is based on the interviews of the first two groups.

1. Initial User Evaluation of Systems Operations

One of the fundamental issues that will impact the long-term growth of this market is user willingness to turn operations over to an outside vendor. Historically, information processing equipment vendors promoted an environment where the user was responsible for the implementation and operation of the equipment that the vendor provided. While this environment has changed to some extent, there still are a number of ingrained concerns that users have regarding releasing management of their information processing activities to an outside vendor.

INPUT asked users and potential users to rank a number of evaluation criteria that might be considered when deciding to use, or not to use, systems operations services. The respondents were asked to indicate which criteria were or would be of primary, secondary, or of no importance to their systems operations decision. The ratings are summarized and ranked in the first column of Exhibit IV-9.

Examination of the initial rankings made it apparent that it is more useful to analyze the data in two groupings, the private and public sectors, because there are fundamental differences in the criteria they use when deciding to use, or not use, systems operations. The public sector includes federal, state, and local governments, and educational institutions. The private sector includes all other vertical market segments.

The private and public sectors agree that the most important evaluation criteria is the availability of better or more flexible service. After service levels, the two user groups rank the remainder of the evaluation criteria differently, as indicated in the exhibit. However, both groups do consider availability of operating personnel of significant importance in making the systems operations decision.

EXHIBIT IV-9

Systems Operations
Original Evaluation Ranking

Overall	Category	Private Sector	Public Sector
1	Better/more flexible service	1	1
2	Availability of internal operating skills	4	2
3	Lower operating expense	2	8
4	Faster application changes	6	4 (T)
5	Data security/privacy	3	12
6	Faster application development	8	4 (T)
7	Response to personnel changes	7	6
8	Reduced capital investment	5	13
9	Mission-critical applications	12	3
10	Near-term cash flow	9	10
11	Labor relations/unions	11	9
12	Executive energy and time	10	11
13	Operation on a dedicated system	13	7

(T) Tied in ranking

The remaining three important criteria in the public sector are related to the vendors' ability to get service to their users. These include the importance of the system service to accomplishing the mission of the organization and the ability to change or develop applications faster.

The private sector's ranking of importance of criteria three through five is quite different. It includes data security and privacy and two financial factors, lower operating costs and reduced capital investment levels.

Data security and privacy is a serious concern to private sector organizations. They require assurance that important business data will be protected from the competition and that employee data will be protected as required by laws that protect the rights of individuals. These factors tend to work against vendor desires to gain efficiencies through having clients operate in a shared-equipment environment.

The private sector criteria ranking also supports the notion that profit-oriented organizations are focused at overall cost reduction and elimination, where possible, of capital investments that do not contribute to a competitive advantage. The efficiencies of vendor-owned equipment environments would seem to satisfy these objectives.

These responses emphasize how different the private and public sectors are, and the importance of establishing different sales and servicing strategies for each.

2. Vendor Selection

Once a user organization decides that it is willing to use a systems operations firm, proposals are requested and evaluated. The same set of users was asked to rank a set of criteria that might be used in the vendor selection process. The resulting rankings were summarized using an approach similar to that used in the initial evaluation questions, and the resulting ranking is provided in Exhibit IV-10. The same segmentation of responses into private and public sector was used.

Once again, the two sectors agreed on two of the first five criteria. Number one is systems operations experience and number three is total cost. The other three important criterion for the private sector are the vendor's ability to protect and secure the client's data; the availability of hardware and systems software maintenance; and, if the system was developed by a systems integrator, that systems operations service was in fact provided by that integrator. This last point emphasizes the market's interest in full service providers and the need for vendors to provide a full range of services to maintain account control and grow their client bases. Once a long-term systems operations contract is in place, the winning vendor has control of the client for the duration of the contract. This could be five, eight, ten, or more years.

The remainder of the top five public sector vendor selection criteria, after vendor experience and overall cost, are the vendor's ability to provide software improvements and repair, and the vendor's willingness and ability to provide operations in the client's facility. INPUT's market forecast highlighted this last factor, noting that federal customers have a clear preference for professional services systems operations operated on client-owned equipment.

EXHIBIT IV-10

Systems Operations
Vendor Evaluation Criteria Ranking

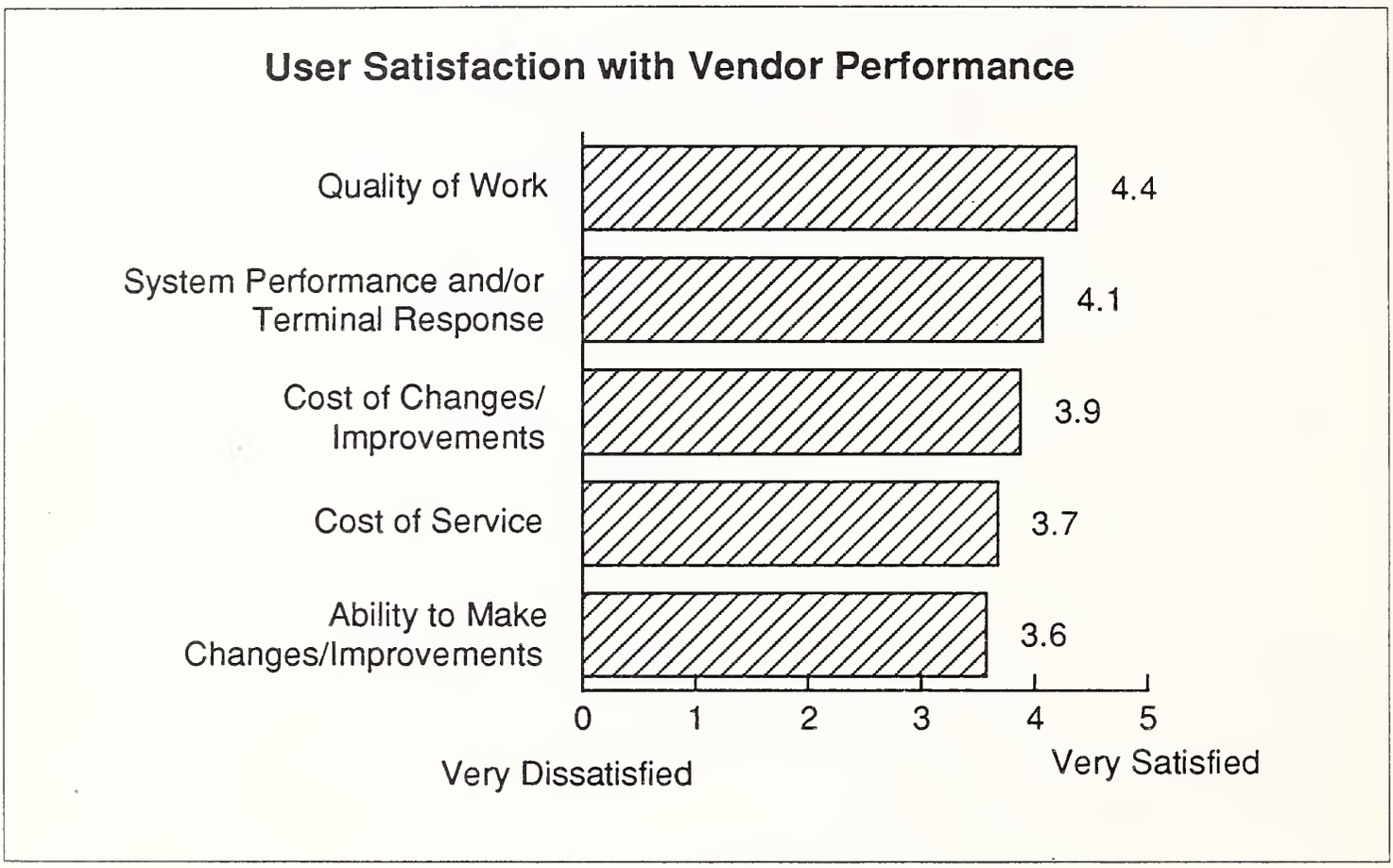
Overall	Category	Private Sector	Public Sector
1	Vendor SO experience	1	1
2	Overall cost	3	3 (T)
3	Data security and protection	2	7
4	If SI contract, SO by prime contractor	5	6
5	Vendor-provided hardware and software maintenance	4	10
6	Application software repair	7	5
7	Application software improvements	9	2
8	Reduced capital investment	6	11
9	Cash flow improvements	8	9
10	SO performed in client's facility	11	3 (T)
11	Labor relations/unions	10	8
12	SO performed at vendor location	12	12

(T) Tied in ranking

3. User Satisfaction

Twenty-one of the 24 users that made the decision to use systems operations vendors were already receiving service. They were asked about their degree of satisfaction with the service they were receiving. The results are illustrated in Exhibit IV-11. As can be seen, these users are most satisfied with the quality of the work and least satisfied with the ability of the vendor to make application changes and improvements.

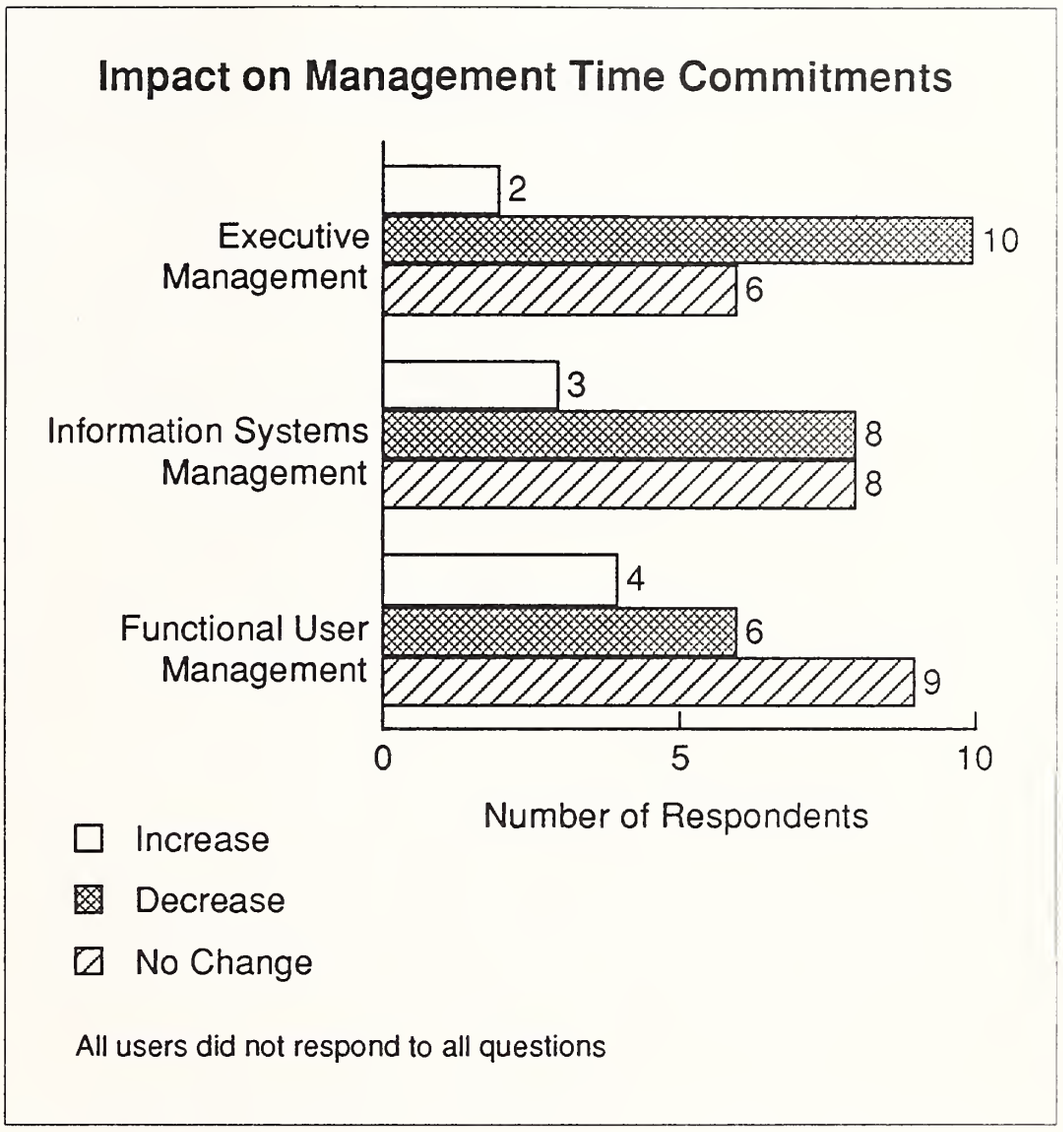
EXHIBIT IV-11



When asked about their experience and expectations regarding system operating costs, users gave varied responses. However, they generally agreed that cost per transaction has and is expected to decrease, total costs have and will increase; and there was no consensus on the costs for modifications and enhancement. Roughly half of the users experienced and expected to experience increases in costs in this area, while the other half experienced and thought they would experience decreases.

During the interviews, users were also asked their opinions of the impact of employing a systems operations firm on their organization's management time commitments after implementation. As can be seen from the results presented in Exhibit IV-12, the largest impact is a decrease in the time that executive management devotes to information systems decisions, and the least impact is to functional management, as would be anticipated. In eight cases, the time commitments of IS management were decreased, presumably providing them with more time to focus on strategic and "mission-critical" applications. These users were also

EXHIBIT IV-12



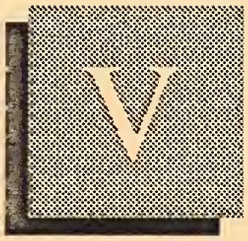
asked about the impact of the systems operations decision on management time during the start-up period. The answers were quite different for executive and IS management, with both investing more of their time in IS-related decisions. The user profile was roughly the same as after full implementation.

When users were asked if they had experienced disadvantages or significant problems using systems operations firms, there were a number of responses. These were responses that could be anticipated and included:

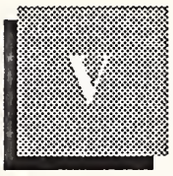
- Cost of service
- Vendor employee loyalty—vendor versus client
- High vendor employee turnover
- Loss of control
- Acceptance of the vendor's staff by the user community

These responses are similiar to those received from the organizations that would not initially consider the use of a systems operations firm. The responses emphasize the need for the vendor to continue to sell its clients after contract award and to train its employees.

Systems operations is a services offering, and employees must be trained to understand that customer service is the purpose of the organization, and clients must be convinced that service is the vendor's most important product. There is clearly a danger that the focus on service, and the service itself, can deteriorate in a long-term contractual relationship. Vendors must instill a service orientation and establish a management system that rewards it. They must train their employees to provide superior service, make sure that it is provided, and then continue to tell the client that he has in fact received it.



Vendor Analysis



Vendor Analysis

This chapter focuses on the systems operations vendor community. The major vendors in the market and their market shares are identified. A market and services structure and segmentation is developed to assist in understanding the strategies and offerings of the various vendors as they operate in the marketplace. Finally the chapter examines one vendor from each market segment to assist in understanding how the market segment operates.

A Leading Systems Operations Vendors

The systems operations market forecast for 1989-1994 was provided in Chapter IV. This chapter examines the vendor revenues for 1988, their last reported year of operation. While their revenues will increase in 1989, there will not be a change in ranking except for one vendor, McDonnell Douglas, which will be discussed.

User expenditures for systems operations in 1988 were nearly $5.2 billion. The leading vendors in this market and their respective market shares are identified in Exhibit V-1.

EXHIBIT V-1

Leading Systems Operations Vendors and Market Shares—1988

Vendor	Market Share (Percent)
EDS	*16
Computer Sciences	5
McDonnell Douglas	4
Shared Medical Systems	3
Boeing Computer Services	3
Systematics	3

* Non-G.M.

Electronic Data Systems is clearly the leader in this market, with 1988 noncaptive (non-G.M.) revenues of nearly $800 million, or 16% of the market. EDS, the pioneer of facilities management in the commercial market, is profiled later in this chapter. EDS provides systems operations services to a broad range of clients and vertical industries.

Computer Sciences Corporation, the second largest vendor in this market, derives a significant amount of its revenues from systems operations contracts for the federal government. Included are major contracts for both the defense and civilian agencies. In addition, CSC provides systems operations to the insurance and state and local government vertical markets.

McDonnell Douglas, ranked third in 1988 systems operations revenues, has reduced its activity in this market as part of restructuring that occurred during 1989. It sold off several businesses, including its TYMNET value-added network to British Telecom and its shared services processing capability for medical institutions to American Express. This will reduce its 1989 systems operations revenues. It retained its SO services for health insurance claims processing and for companies in transition.

Both Shared Medical Systems and Systematics focus on single vertical markets: Shared Medical on the medical industry, and Systematics on banking and finance. Boeing Computer Services has a more functional orientation providing systems operations services in the areas of network integration and management, image processing and document control, and computer-aided design and manufacturing.

B

Vendor Market and Services Focus

As research was conducted for this study, it became clear that there was not a well-structured way to examine the vendors in the market to better understand their offerings, modes of operation, and strategies. The systems operations market includes a significant number of participants. Some of these are well known because of their size or breadth of offerings, while others are niche participants and are not well known. To assist in understanding both the market and its participants, the structure that is identified in Exhibit V-2 was developed.

This simple structure divides the systems operations market into four segments. Vertically, the vendor community is segmented into vendors that primarily provide processing-based systems operations services on equipment that they (the vendors) own, and professional services-based vendors whose primary offering is professional personnel to provide systems operations services on client-owned equipment.

The horizontal segmentation of the market is based on vendor market focus. The first market focus segment is a narrow market focus. Vendors in this segment typically focus on one, or at most two, vertical industry markets. Others in this segment have a specialty focus, focusing on a cross-industry application specialty or providing service on a single vendor's hardware. The second market segment, broad industry coverage, is where vendors typically offer systems operations services for a broad range of applications areas across a broad range of vertical industries.

INPUT has populated this structure with representative vendors that demonstrate the structure. For example, Systematics, in the upper left segment, bases its entire business on products and services that it provides to the banking and finance vertical market. Its primary systems operations services are provided on Systematics-owned equipment on or near the customer's location. Systems and Computer Technologies, in the upper right segment, focuses on the state and local government and education vertical markets, and provides personnel to perform systems operations planning, management, and operations on the client's equipment and premises.

EXHIBIT V-2

Systems Operations Vendors

Market Focus	Services Focus: Processing Services	Services Focus: Professional Services
Narrow Focus	Covia (United Airlines) Shared Medical Systems SEI Corporation Mellon Bank Security Pacific Corp. Genelco Total Systems Services Systematics, Inc.	Systems & Computer Technology Westbridge Computer Services* Vanguard Technologies HBO Unisys SAIC LGS Group, Inc.* OAO Corporation Oracle Complex Systems Sterling Software BDM International (Ford) Syscon Corporation CGI Group*
Broad Industry Coverage	Electronic Data Systems (G.M.) McDonnell Douglas Computer Sciences Corp. Boeing Computer Services SHL Systemhouse* Martin Marietta Litton Computer Services IBM	Andersen Consulting American Management Systems Computer Task Group STM Systems Corp.*

* Canadian

EDS, in the lower left quadrant, provides broad coverage to a number of vertical industry markets. While it provides both processing and professional services systems operations, the majority of its SO revenues come from the processing services mode.

Vendors who derive the majority of their current systems operations revenues from the provision of professional services-based systems operations include American Management Systems and Andersen Consulting, in the lower right quadrant.

Two important points must be made regarding this market. First, vendors rarely participate in only one segment of the competitive structure that has just been described. Most vendors claim to offer both processing and professional services offerings, although they tend to have preferred service offerings or market focuses.

The second point is that most vendors that operate in the broad industry market segments tend to focus on providing a processing services offering. They typically do not have the industry expertise, or industry-specific software packages of a vendor that is focused on a narrow market. Instead, they focus more on developing and leveraging operating efficiencies on equipment they own.

C

Vendor Business Objectives, Offerings, and Strategies

1. Business Objectives

INPUT's survey of systems operations vendors provided the assessment of vendor business objectives as shown in Exhibit V-3. Of the four objectives offered, two primary objectives were clear: first to respond to customer demands, and second to generate revenue and profits for the vendor's organization. Most of the vendors also indicated that providing systems operations service was important to retaining control of their client base; half of the vendors identified this as a primary business objective. Three vendors also added a fifth primary business objective—retaining long-term client relationships. One of the fundamental characteristics of systems operations is that contracts are generally long-term, often for five years or longer, and provide a long-term cash flow and business relationship.

Sixteen of the 18 vendors also identified "flow-through" revenues and profits as a business objective. Systems operations provides vendors opportunities to gain profit margins on both initial and add-on equipment, software, and supplies that they remarket to their customers.

EXHIBIT V-3

Systems Operations Business Objectives

	Primary	Secondary
Response to customer demands	17	1
SO revenue and profit	15	2
Control of client base	9	7
Hardware and software revenue and profits	6	10

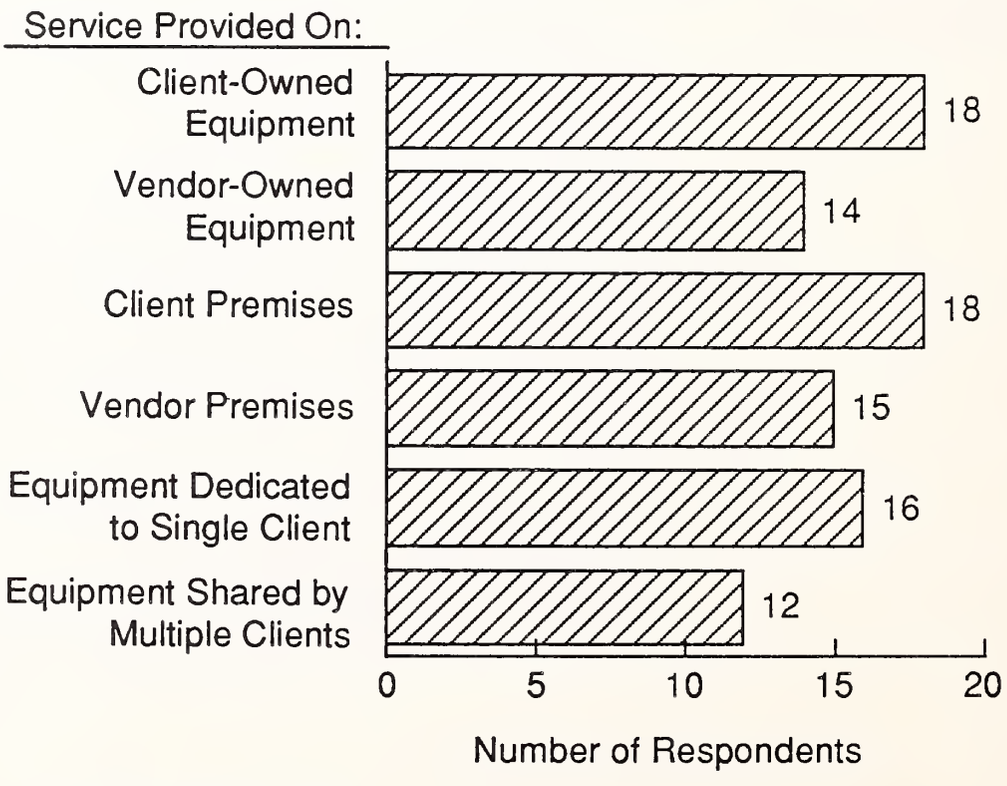
18 respondents

2. Business Offerings and Capabilities

Exhibit V-4 supports the notion that most vendors are providing a full range of operating environment options to their clients.

EXHIBIT V-4

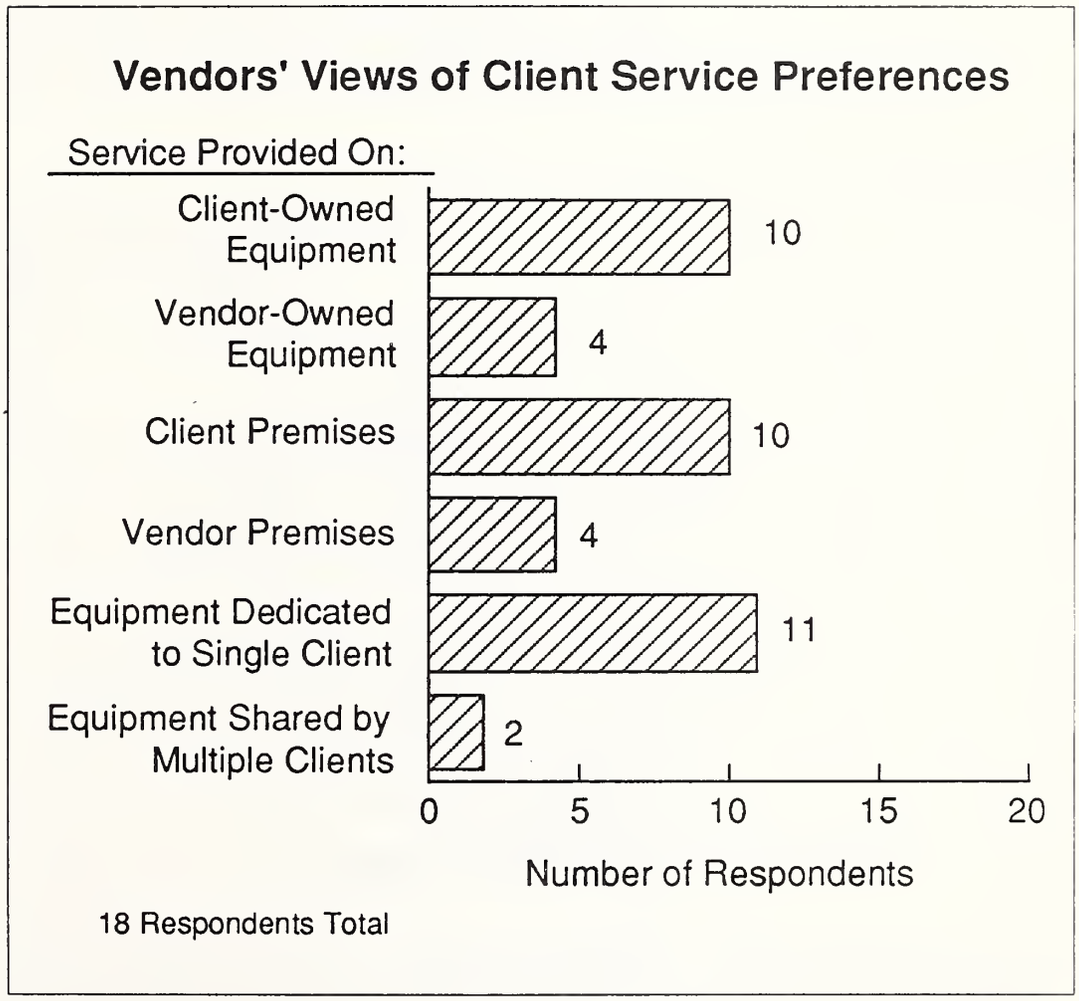
Service Modes Offered



18 Respondents Total

When asked what clients prefer, vendors say it is operation of dedicated client-owned equipment, on the client's premises. See Exhibit V-5. Vendors stated that clients had a sense of security when systems operations was performed in this environment. User interviews supported this view but did not support the need for client equipment ownership. Systems operations on the customers' premises does much to overcome one of the negative forces slowing SO growth, concern for data security and privacy.

EXHIBIT V-5



Vendor preferences are different. Most prefer an environment where processing is accomplished in a shared-processing environment on vendor-owned equipment. This environment permits them to utilize their personnel and equipment more effectively and provides more equipment inventory management flexibility, both in terms of new technology insertion and management of equipment residual values. These factors add up to lower-cost service to the client and more flexibility for the vendor to develop an offering that gives them a competitive advantage.

Most SO firms offer a variety of other information services and products. All of the vendors interviewed, (and some were relatively small) offer systems integration services as indicated in Exhibit V-6. They also believe that offering SI services is very important to success in the SO market, perhaps more important than any of the other services identified. It can also be seen from this exhibit that all of the vendors provide software development and maintenance, and education and training to their clients. Other offerings, provided by ten or fewer of the vendors (ranked by number of mentions) include computer and communications hardware, hardware service and repair, and packaged systems software. Nine of the 18 vendors also provide fiscal agency services and perform administrative duties as well as information processing services.

EXHIBIT V-6

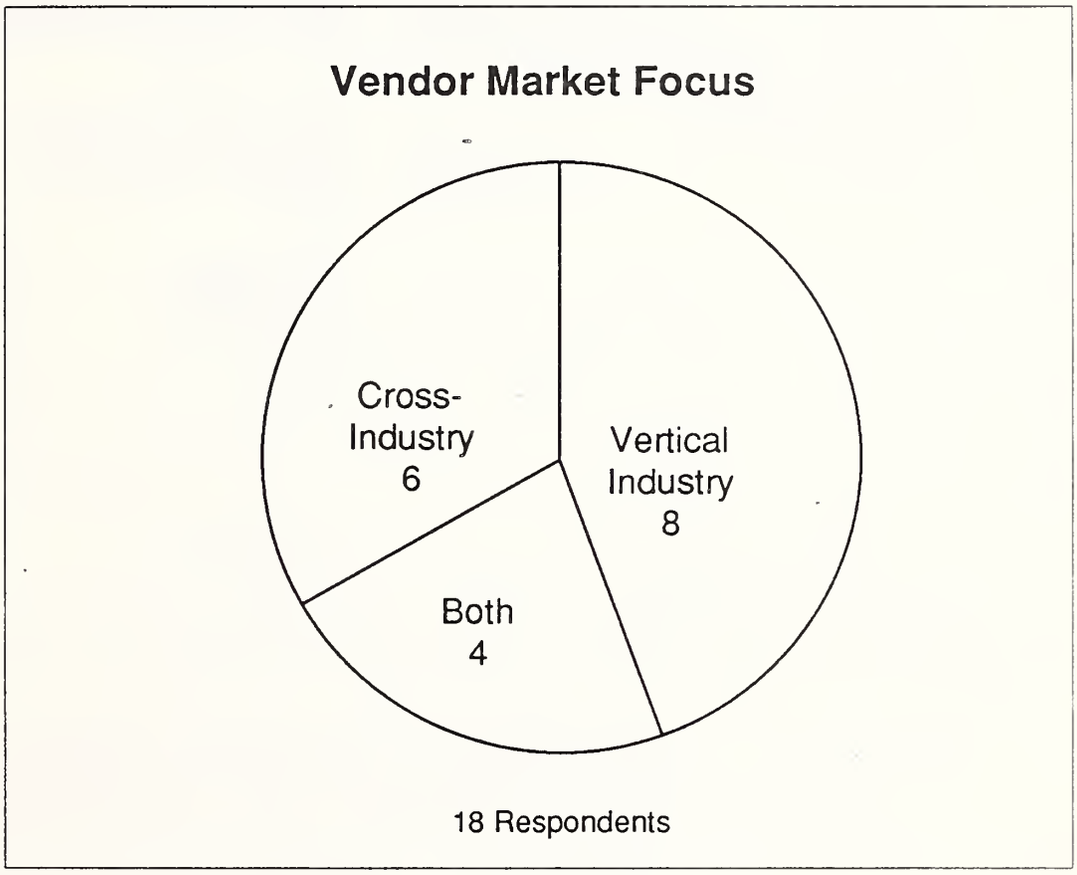
Systems Operations Firms' Other Offerings

Capability	Number Offering	High Importance
Systems integration services	18	15
Software development service	18	11
Software maintenance	18	11
Education/training/documentation	18	6
Business consulting	17	4
Disaster recovery service	12	4
Packaged applications	12	4

18 Respondents

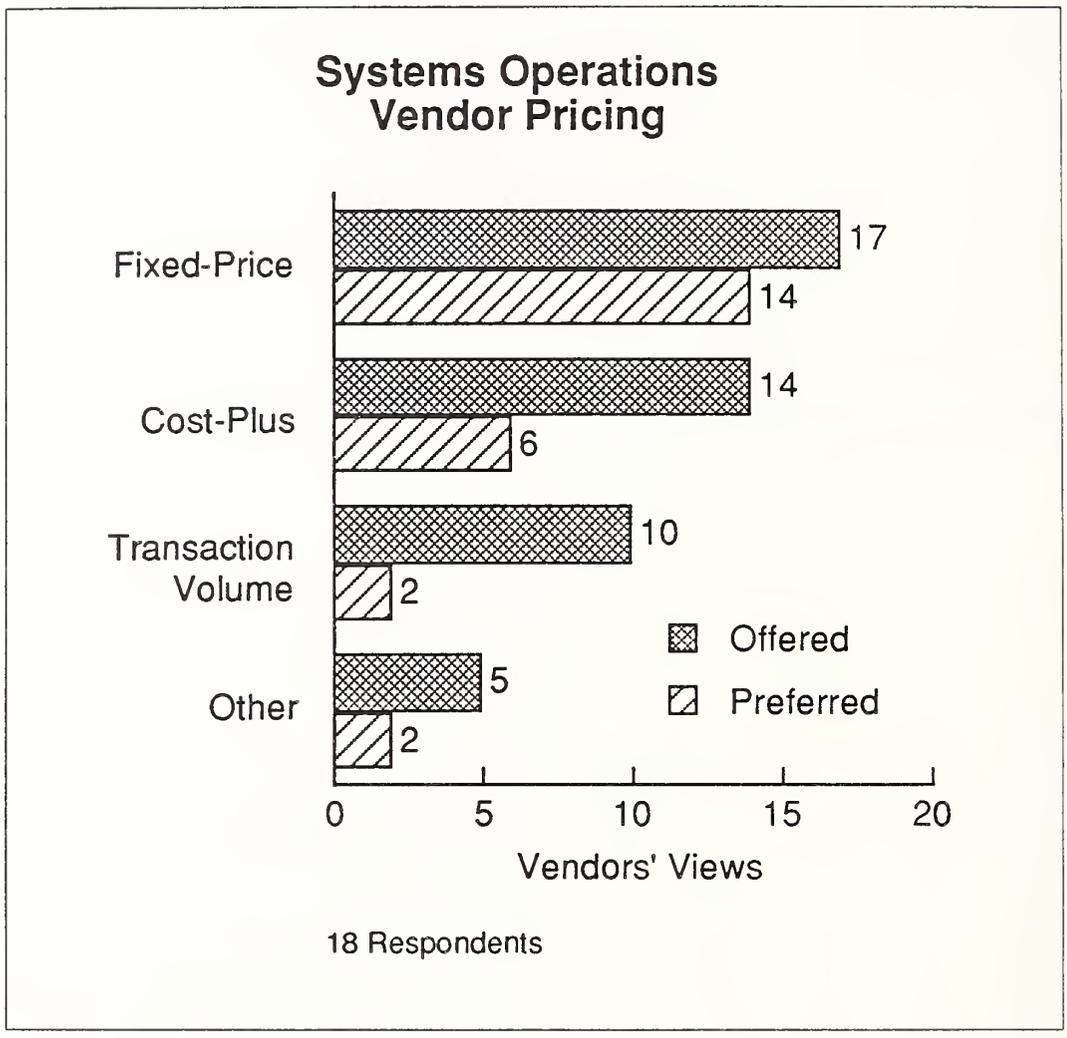
Vendors focus on the SO market in a variety of ways. This is illustrated in Exhibit V-7. The most common focus is on one or a number of vertical industry markets. Some vendors market unique cross-industry products or capabilities, while others look for clients that have specific characteristics. For example, one vendor focuses on opportunities that have large network management or image processing content, and others look for businesses that have undergone or are undergoing change through mergers, acquisitions, or restructuring.

EXHIBIT V-7



Vendors prefer fixed-price contracts. Exhibit V-8 identifies the pricing alternatives that vendors offer, and the ones that they prefer. The other pricing category included hourly labor rates, and government cost-plus-incentive and cost-plus-award agreements.

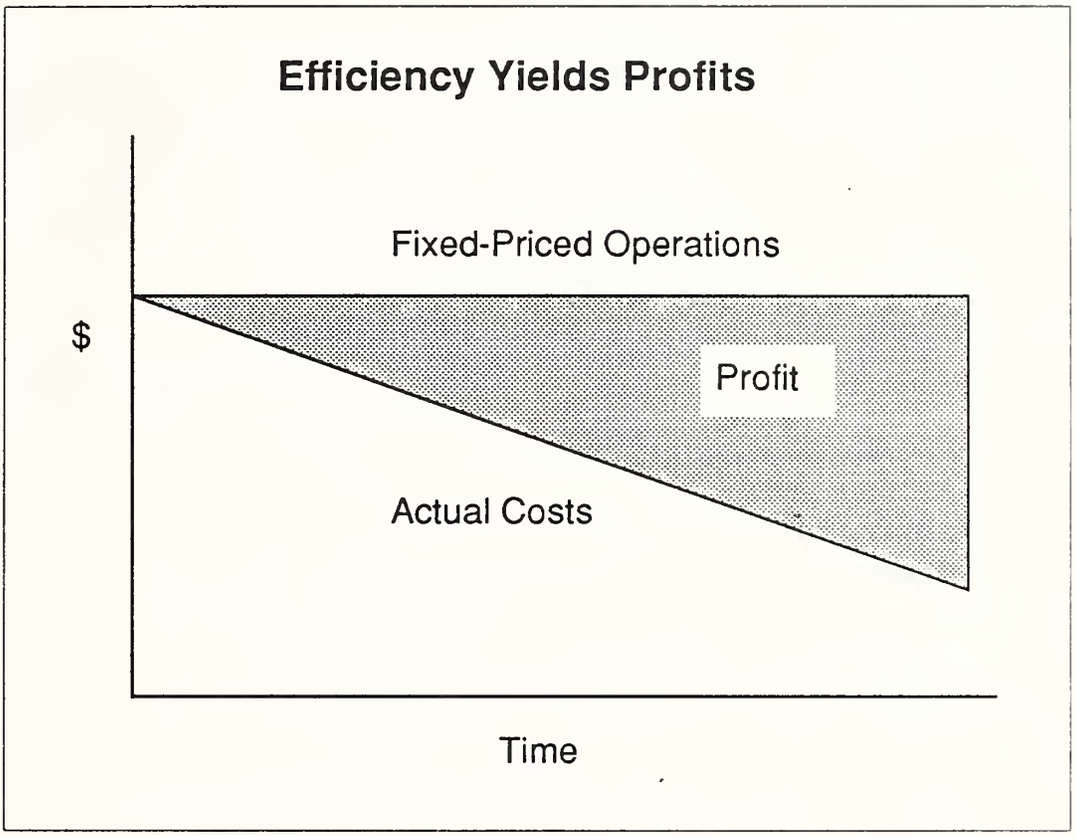
EXHIBIT V-8



Most often, the vendors who prefer fixed-cost contracts prefer them for many of the same reasons that vendor-owned equipment, operation on vendor premises, and shared equipment are preferred. A combination of these factors at a fixed price provides the vendor with flexibility to manage cost, and the personnel resources and technology to maximize profit. Exhibit V-9 graphically illustrates this concept.

In this example, the vendor offers a fixed price to the client based on flat or modestly escalating cost assumptions that appear to provide modest profit margins. These margins can be increased handsomely, however, if the vendor manages the cost leverage it has at its disposal. The vendor can apply technology to improve personnel productivity, insert technology to make processing more efficient, and apply a number of other cost-management techniques. The contract that appears to have low margin today may become a real "cash cow" if managed effectively. Forward pricing concepts need to be clearly understood and applied in the systems operations environment. The vendor's pricing flexibility and ability to assume risk are very much a result of the number of variables that it controls.

EXHIBIT V-9



Two other offerings provide vendors with additional technical leverage. Vendors such as CSC, EDS, and GE have value-added networks that provide them with the flexibility to move the workload from one processing center to another. IBM has implemented a remote "lights out" operating capability which allows it to operate processing centers, that have virtually no operators, from remote control centers. Applications of technology like these provide vendors with additional opportunities to reduce cost and improve the competitiveness of their offerings.

3. Transition Management

Staffing can be critical to a successful SO contract. When a vendor assumes responsibility for client activities, it must have a qualified and competent staff on hand. Few vendors have the numbers of qualified personnel either available or with the capacity to immediately understand the client's environment. The best and most common strategy employed is to hire part or all of the client's existing operating staff. Vendors will bring in their management personnel and attempt to retain most of the client's original operating team to both insure a smooth transition and have adequate personnel to meet their commitments to the client. Vendors then provide these "new employees" with education in their particular operating techniques and procedures. Most vendors believe this strategy is essential for a successful transition.

D

Systems Operations Vendor Examples

The purpose of this part of Chapter V is to provide examples of companies that operate in the market segments identified earlier and as shown in Exhibit V-10. The companies that will be described are identified in the exhibit. In addition, IBM, a recent entrant, and anticipated to be a powerful influence on the systems operations market, is described.

EXHIBIT V-10

Examples of Systems Operations Market and Services Focus

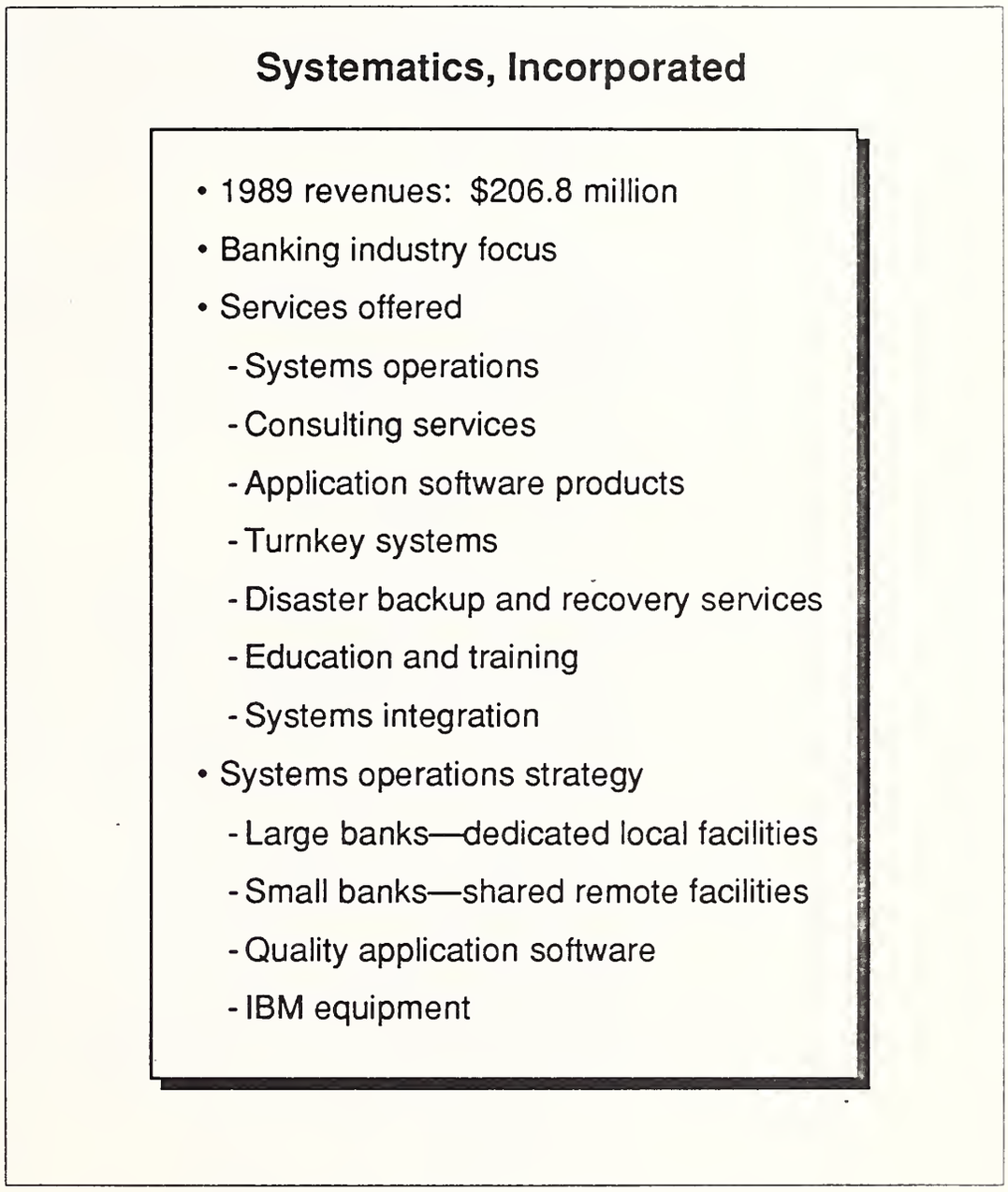
Market Focus	Services Focus: Processing Services	Services Focus: Professional Services
Narrow Focus	Systematics, Inc.	Systems and Computer Technology
Broad Industry Coverage	Electronic Data Systems	Andersen Consulting

1. Systematics, Incorporated

Systematics, Inc. is an example of a systems operations company with a processing service and single vertical market focus.

This business, founded in 1968 and headquartered in Little Rock, Arkansas, provides systems operations and other information services to the banking and finance industry, from which it derived 100% of its reported 1989 annual revenues. Highlights of the company are provided in Exhibit V-11.

EXHIBIT V-11



a. Product and Service Offerings

Approximately 76%, or $150 million, of Systematics' fiscal 1989 revenues were derived from systems operations, 11% from application software products, 4% from consulting services, and the remaining 9% from equipment sales and leases.

Systematics has developed a full set of integrated banking and financial applications called Systematics Integrated Financial Software. This software is available to SO clients and is also available as separate standalone software products to other interested prospects.

In January 1986, Systematics made two acquisitions to expand its software and services offerings to its clients and prospects. It acquired Dallas-based Matrix Management, Inc., a firm specializing in management consulting to the banking and finance industry, and Chanin Consulting Services (CCS) of New York. CCS markets a securities lending support software product to large trust departments.

Systematics offers a turnkey system, The Community Bank System, an IBM System 36- or AS/400-based multi-bank, multi-branch system, for community banks with $50 million to $200 million in deposits. Systematics also operates as a value-added remarketer for the IBM personal computers and markets a microcomputer-based software package that is a planning package for financial management.

b. Systems Operations

Systematics provides two forms of delivery of SO services to its clients. For its larger clients, banks with deposits over $250 million, it locates and operates a data center in or near the bank. There are over 60 data centers owned by Systematics. Contracts for these large clients are usually five years in length and include a 99-year nonexclusive license for the client to use the Systematics-developed software. There were 72 of these contracts in place in June of 1989.

Remote processing systems operations is provided for smaller banks from three company-owned data centers. These services are generally less customized than those provided to the larger clients and are also offered under a five-year contract. The smaller banks can also purchase a nonexclusive contract to continue to use Systematics software following the original remote processing contract. Systematics had 56 clients using this service in the latter half of 1989.

c. Summary

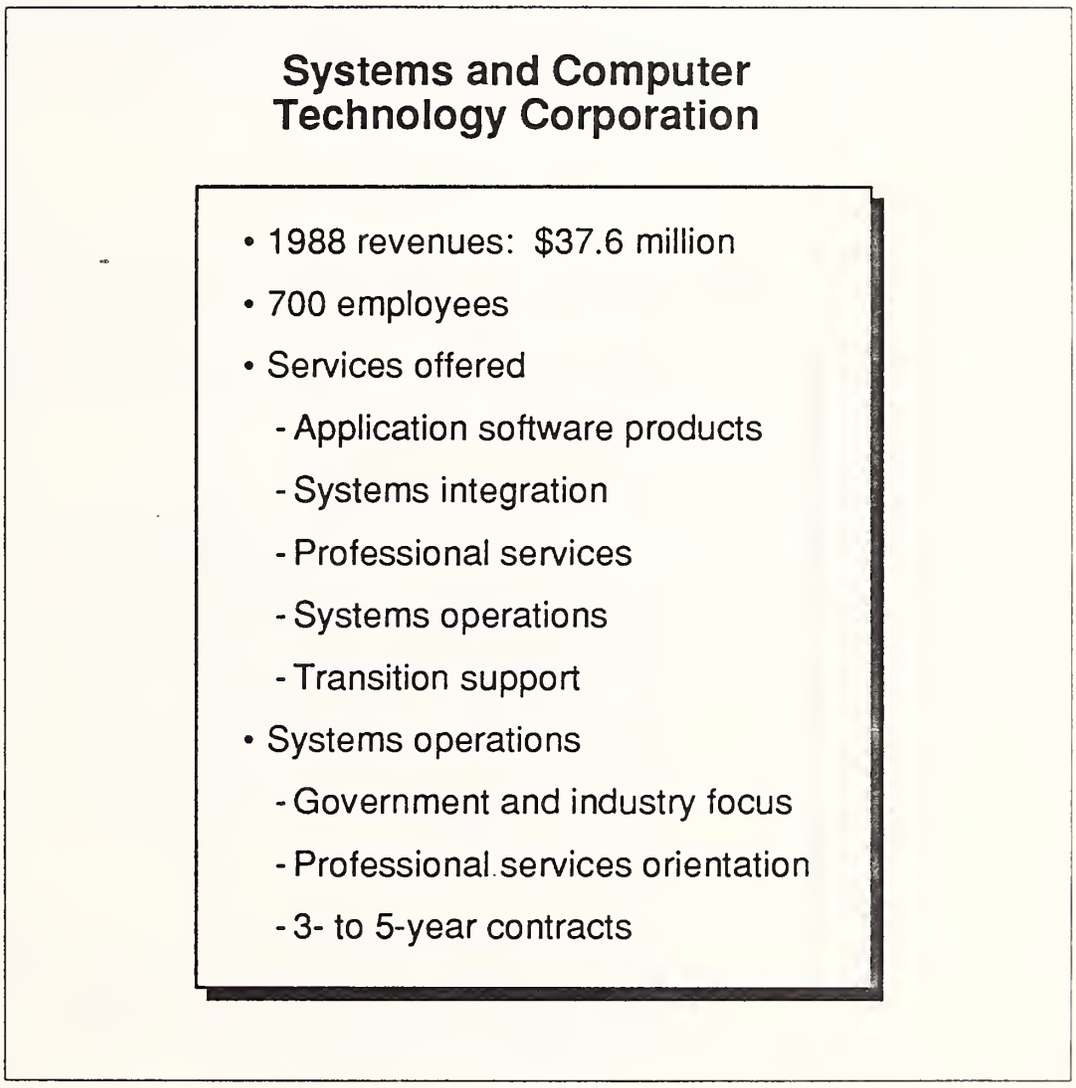
Systematics is an excellent example of a company focused on providing total information services to a single vertical market. It is vertically integrated to the extent that it provides front-end business consulting, a comprehensive set of industry-focused software products, and systems operations. This results in complete information processing services for its clients.

2. Systems and Computer Technology Corporation

Systems and Computer Technology Corporation (SCT) is an example of a professional services-based systems operation firm that provides services with a narrow vertical market focus.

SCT was founded in 1968 and is located in Malvern, Pennsylvania. INPUT estimates that $30 million of its 1988 revenues of $37.6 million are derived from, and 500 of its 700 employees are employed in, its systems operations business. SCT's highlights are identified in Exhibit V-12.

EXHIBIT V-12



Approximately 84% of SCT's fiscal 1988 revenues were from professional services, 12% from application software, and the remaining 4% from interest and other sources.

a. Product and Service Offerings

All of SCT's products and services are developed for, and marketed to, state and local governments and educational institutions. It is organized into two operating divisions, the Information Resource Management Division and the Software and Technology Services Division, to service these industries.

The Information Resource Management Division provides packaged software and telecommunications planning and implementation services. The software products are focused at automating administrative functions of education and government. Packages have been developed to operate in a variety of vendor hardware environments, including DEC VAX and IBM mainframes.

SCT Information Resource Management Division's primary focus is on systems operations services. It also offers custom software development and systems integration services.

b. Systems Operations

SCT was originally established to provide transition management and assistance for public sector organizations that were moving to a new systems operating environment. Its services included initial operations of the clients' new systems, and ultimately, longer-term facilities management contracts. Today, SCT provides complete systems operations services for its clients.

Under a systems operations contract, SCT provides planning, management, staffing, and operating capabilities for its clients' information resources—the data processing center, management information systems, office automation systems, and telecommunications systems. SCT personnel are located on the client's premises to manage or staff any of these functions. Responsibilities can include data center operations, administrative systems development, budget control, long-term planning, user liaison, training, hardware procurement, technical and operations support, data center design, and integrated communications design and implementation.

Information resource management contracts typically cover a three- to five-year period, with an option to renew. SCT had 36 of these long-term contracts in place in September 1988.

c. Summary

SCT promotes its services based on 20 years of experience, customer satisfaction, and on being the largest provider of professional services-based systems operations in its industry niche.

3. Electronic Data Systems

EDS is an example of a company that provides processing-based systems operations services to a broad set of markets. EDS was originally founded in 1962 by Ross Perot to provide facilities management services. Perot sold EDS to General Motors in October 1984. EDS is a leading information and communications services company and provides services to over 6,000 clients worldwide. Its worldwide revenues in 1988 were $4.8 billion, 41% of which were derived from non-G.M. clients. Exhibit V-13 highlights EDS' revenues, services, and systems operations focus.

EXHIBIT V-13

Electronic Data Systems

- 1988 revenue: $4.8 billion
  - Systems operations—Approx. $800 million (non-G.M.)
- 54,000 employees
- Services offered
  - Systems operations
  - Systems integration
  - Fiscal agent
  - Professional services
  - Processing services
- Systems operations focus
  - Banking and finance
  - Insurance
  - Manufacturing
  - Retail distribution
  - Government

a. Product and Service Offerings

EDS provides its clients with services in 21 information processing centers worldwide or at the client's premises. In addition to systems operations, EDS derives revenue from a number of other highly synergistic services. These services range from remote processing services for clients that want application processing services from an EDS data center, to systems integration services developing total solutions for clients. These services develop relationships with clients that can and often do build into full systems operations contracts.

EDS will also act as a fiscal agent for a client, not only assuming responsibility for information processing services, but also performing additional administrative duties. When under contract with an insurance client, this may include processing and paying claims, as well as ensuring proper coordination of benefits.

b. Systems Operations

Of EDS' $1.9 billion 1988 noncaptive revenues, INPUT estimates that nearly $800 million were derived from systems operations. Systems operations services are provided on client- or vendor-owned equipment, on client or vendor premises, and on equipment dedicated to a single client or shared by multiple clients. EDS' operating preference appears to be operation on EDS-owned equipment in one of its major data centers, preferably on equipment that is shared by multiple clients. This environment reduces the client's need for capital investment and leverages the EDS infrastructure to provide the most cost-effective solutions to the client.

EDS' systems operation vertical market focus is also identified in Exhibit V-13. Examples of recent contract wins in some of these industries are Meritor Bank of Philadelphia, and Depository Guaranty Bank of Dallas in banking; Enron, Placid Oil Co. and Freeport-McMoran in process manufacturing; and the Automobile Full Insurance Underwriting program in New Jersey.

c. Summary

EDS, the pioneer in facilities management, has broadened its services and is the clear leader in the commercial systems operations business. Its size, experience, and financial resources will continue to make it a very aggressive and capable competitor in this market.

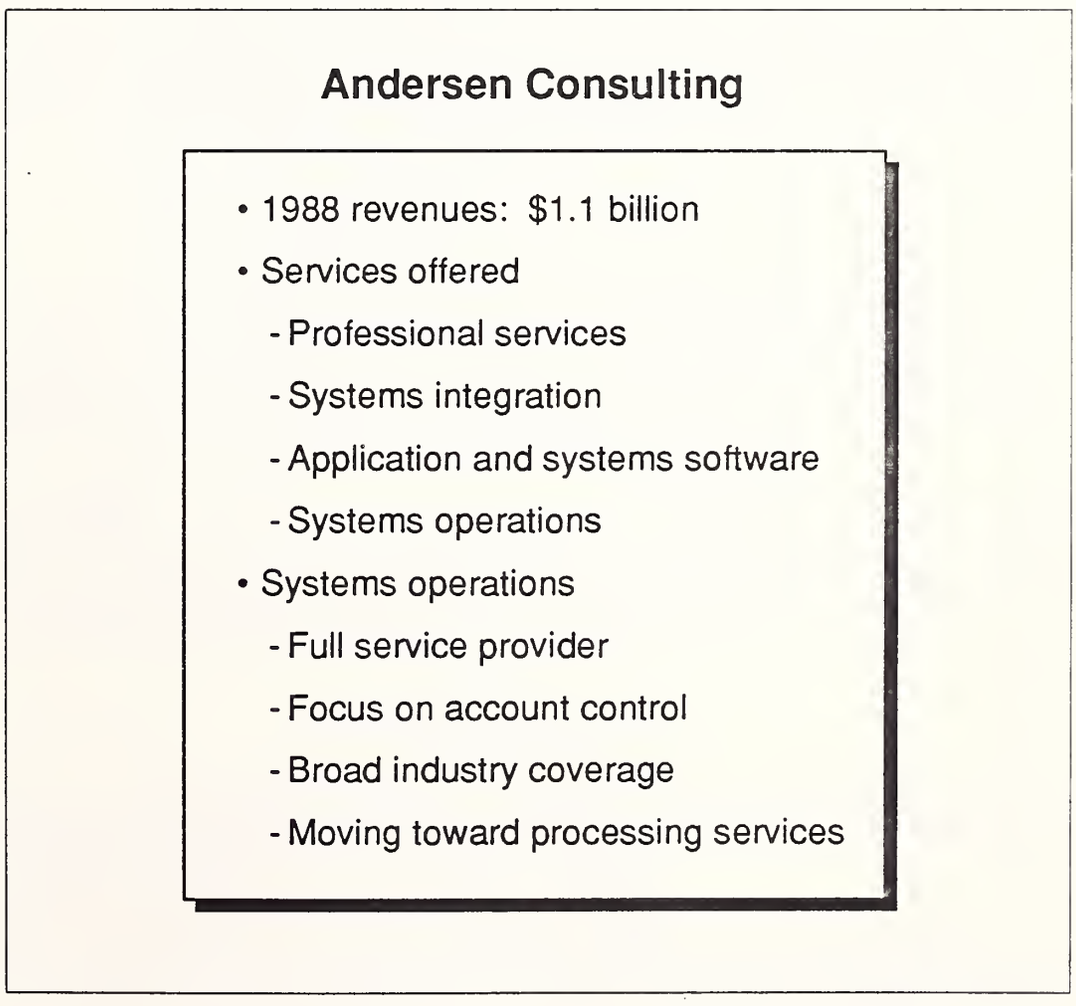
4. Andersen Consulting

Andersen Consulting is a company that is operating in the professional services, broad market, segment of the systems operation market.

Arthur Andersen and Company, organized as a partnership, is one of the original "Big 8" public accounting firms. In addition to offering world-wide accounting, auditing and tax services to its clients, Arthur Andersen and Co. offers a variety of information services through Andersen Consulting (AC), formerly the Management Information Consulting Division. Over the last decade, AC has emerged as a significant participant in the information services market.

Highlights of Andersen Consulting are presented in Exhibit V- 14. In 1988 AC's worldwide information services revenues were $1.1 billion, $632 million of which was from U.S. operations. These revenues are for professional services only, and do not include revenues from equipment that may be included in systems integration contracts. More than 7,000 of Andersen's 15,000 IS practice personnel are located in the U.S.

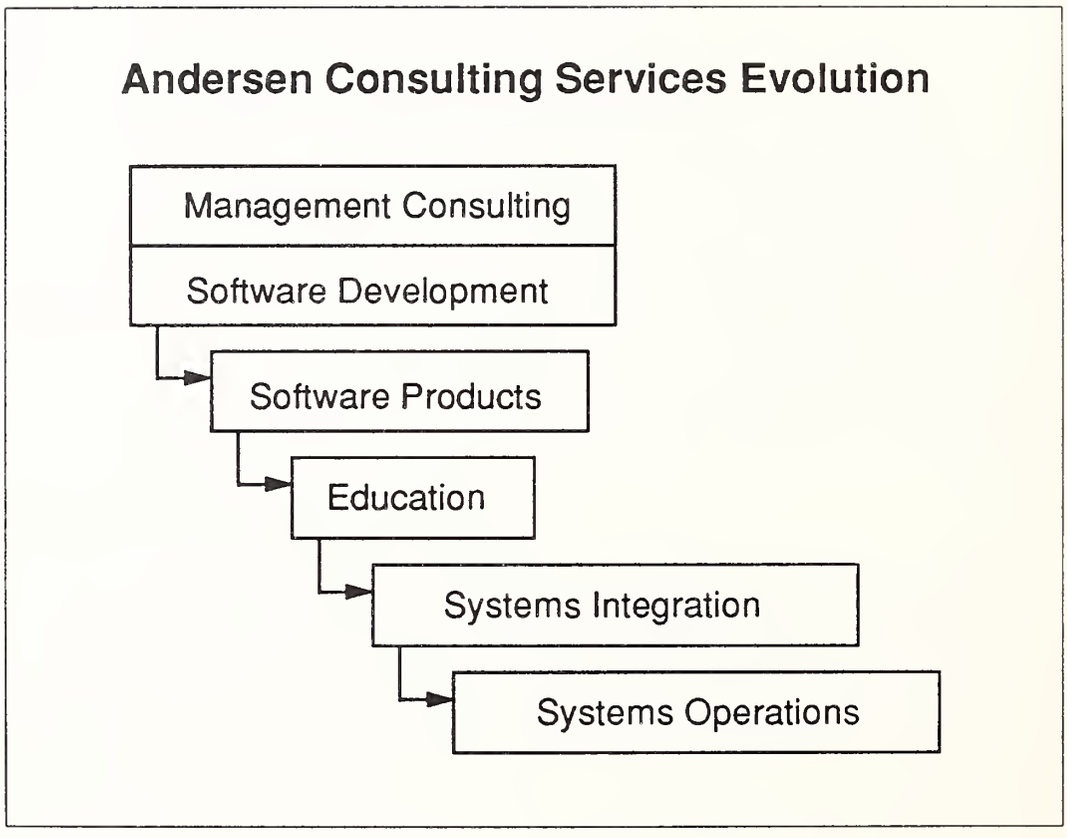
EXHIBIT V-14



a. Product and Service Offerings

The evolution of AC's offerings is shown in Exhibit V-15. Today's business is focused around assisting clients manage change in their businesses as they compete in a new and expanding global market. Andersen's strategy is built around working with the client to define what changes should be made in the the business and organization to become more competitive in a changing environment. Once definition is completed, Andersen works with the client to implement the required change. This can mean rebuilding applications, developing complete systems, and/or establishing completely new operating environments. Andersen provides a complete range of professional services, from consulting through packaged software products to custom systems integration and systems operations, to meet its clients' needs.

EXHIBIT V-15



b. Systems Operations

Andersen has recognized the importance of developing and retaining a loyal client base. They also recognize that systems integration contracts provide a "springboard" to systems operations contracts. These contracts in turn provide long-term relationships and client account control. In 1988, AC began to aggressively promote its participation in the SO

market and formally added SO to its full line of information services offerings. This provided the needed vehicle to ensure long-term relationships with its clients and eliminated the danger of another systems operations firm capturing its clients.

Andersen Consulting's historical approach to the information services market has been to provide professional services to support its clients' needs, and systems operations is no exception. It has typically provided professional services on a per-hour basis. Systems operations services were originally this type, with AC providing professional personnel to run the client's equipment.

Andersen Consulting's business practices are changing. AC provides systems integration at a fixed price and systems operations services in AC-owned service centers on AC-owned equipment, in Chicago, Stamford, Connecticut, and Dallas. The SO mix is changing, and almost 50% of systems operations revenues come from systems operations performed in its three service centers. As its business became larger and broader, AC recognized the need to leverage its skills and resources more effectively by promoting systems operations in its service centers.

Andersen has focused its information services and products at a fairly broad set of vertical industries and has a similar SO focus. Target markets include manufacturing, retail and distribution, oil and gas exploration, defense contractors, and public utilities.

c. Summary

Andersen Consulting has established strong client relationships and loyalties by providing business consulting and then solution implementation, often through systems integration. It will use these relationships as springboards to systems operations contracts which will in turn provide account control and long-term client relationships.

While AC currently is an example of a broad market-focused professional services SO supplier, it, like others that have a broad market focus, has recognized the need to migrate to promoting services on equipment it owns in AC service centers.

5. IBM

It is worthwhile to briefly discuss IBM's entry in the systems operation market, as it will most likely have a profound impact on this market in the 1990s.

IBM is the world's largest manufacturer and servicer of information processing equipment. Over the last ten years it has been implementing a strategy to capture a larger share of the information services market.

IBM recognized that information services is growing faster than the equipment business and that it must participate more aggressively in services if it is to retain its share of the total information processing market. IBM also recognized that as its client base became hungrier for a broader range of services, it was in danger of losing account control and customer partnerships, a position it had achieved through years of successful marketing of information processing equipment. IBM highlights are provided in Exhibit V-16.

EXHIBIT V-16

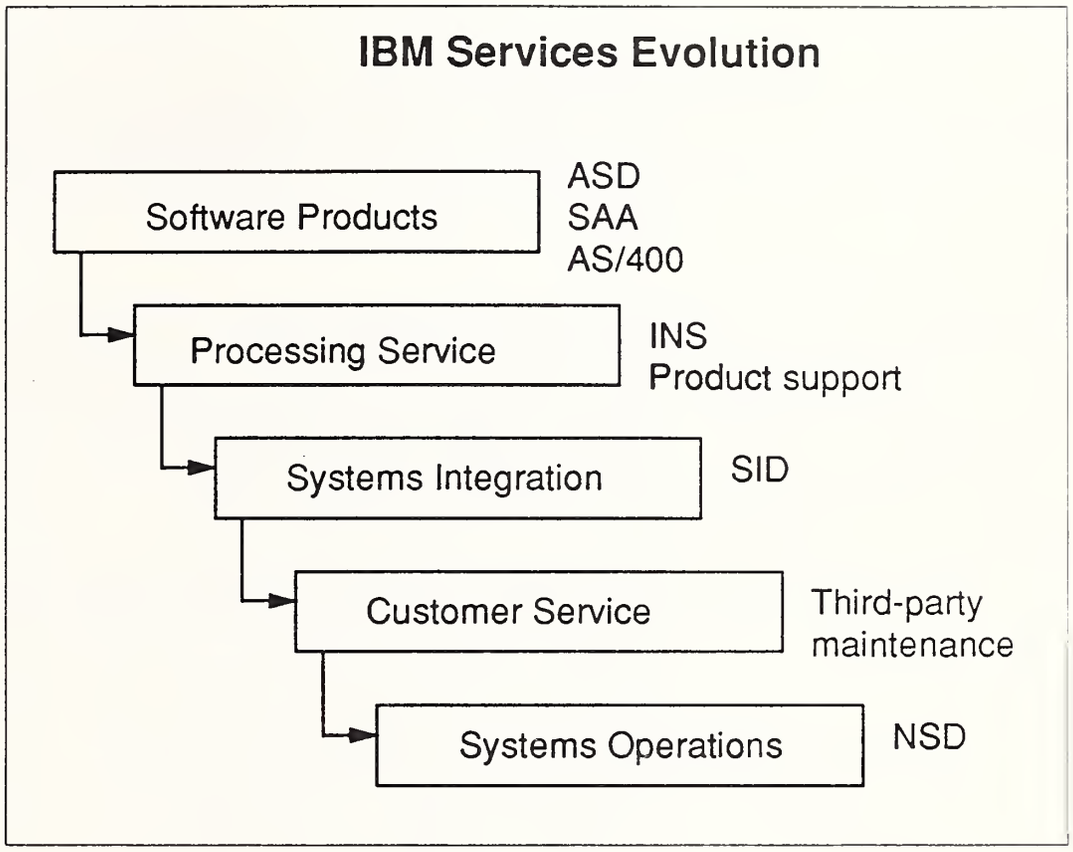
IBM Corporation

- 1988 revenues: $59.6 billion
- 380,000 employees
- Services offered
  - Information processing equipment and maintenance
  - Systems and applications software
  - Systems integration
  - Professional services
  - Processing services
- Systems operations
  - National Service Division lead
  - International operating experience
  - Complete product line
  - Strong financial resources
  - Full service provider

a. Product and Service Offerings

In the last decade, IBM entered businesses it had not been in, reentered businesses it had exited, and increased participation in businesses that it was in on only a token basis. These activities are highlighted in Exhibit V-17.

EXHIBIT V-17



While IBM continues to operate as the world's largest provider of information services products it has also:

- Reentered the remote processing business through its Tampa-based value-added network, INS
- Increased the role of its professional services organization from one that provided custom programming, consulting and education on an hourly basis, to a systems integrator providing fixed-priced solutions
- Redirected a significant amount of its federal systems integration resources to commercial integration and solution development
- Made a major effort to penetrate the application software business through its Application Systems Division, by both internally developed products and through established alliances, partnerships, and remarketing agreements with many software companies
- Acquired ownership positions in over 20 software and professional services companies to support its strategy
- Expanded the role of its service division to include a variety of new services, including site planning and preparation, LAN installations, software problem management, network support, business recovery support, environmental management, and most recently, systems operations

b. Systems Operations

To insure the retention of long-term customer relationships, control of its client base, and market share, IBM's strategy has clearly been to become a full service provider to its customers. Systems operations, with its long-term contracts, provides the perfect vehicle for accomplishing this goal.

IBM is implementing its systems operations strategy through its National Service Division (NSD), headquartered in Franklin Lakes, New Jersey. Recently it won three major systems operations contracts at Kodak, Hibernia Bank, and Bank South. These wins will most likely be the first of many, as IBM's strategy unfolds and it sharpens its systems operations skills and capabilities.

IBM internally is one of the largest users of information processing equipment and telecommunications networks in the world. It has also become one of the most efficient users of these resources. Over the last decade it has focused on a concept called "automated operations." It has established an operating environment where most of the activities that require personnel have been eliminated or moved via its network to centralized locations. As a result, many of its data centers are now operated in a "lights out" mode remotely from control centers.

IBM has and will use this internal operating experience in the systems operations market. As IBM implements its systems operations strategy, automated operations, lights out environments and extensive use of networking can be anticipated. These environments and capabilities should allow IBM to have a very lean and competitive personnel component to its SO pricing strategy. This strategy and capability also permits IBM to operate equipment at the clients' locations which many clients prefer. It also ensures that IBM equipment is on client premises which has strategic importance in promoting IBM products. It seems unlikely that IBM would promote moving its equipment from its customers' locations.

IBM's extensive product line provides its systems operations strategists and pricers with access to equipment and software products at rates that can be packaged attractively in a systems operations contract. In addition, NSD has access to the financial resources to invest in equipment that it will own and operate for the client. This includes the IBM Credit Corporation which can assist in financing equipment and operating facilities at or near the client's location. In addition, it seems likely that the IBM Credit Corporation has access to depreciated IBM equipment that has been on long-term leases and may be used by NSD for systems operations or remote processing applications.

c. Summary

IBM has the resources and internal operating experience to become an extremely significant player in the systems operations market. It will use systems operations as a vehicle to maintain account control whenever customer equipment relationships are threatened.

E

Vendor Strategies Summary

Exhibit V-18 summarizes the vendor strategies that have been described in this chapter. The information services market continues to evolve, and as it does, vendors will expand their portfolio of offerings to attract and maintain a loyal client base. There are a variety of ways of accomplishing this, ranging from focus on a narrow vertical industry or functional focus to providing services to a broad range of clients. Regardless of the strategy selected, primary information product and services providers that depend on long-term client relationships must directly offer, or have alliances that offer, systems operations services.

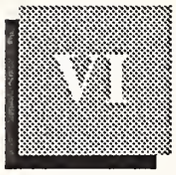
EXHIBIT V-18

Summary of Vendor Strategies

- Full service providers
- Vertical market focus
- "Shared resource" usage
- Systems operations and systems integration synergy
- Profits from "flow-through" and technology management
- Hiring of on-board staff
- Global VANs
- Remote operations
- Fixed-price offerings

VI

Market Summary and Recommendations



Market Summary and Recommendations

The systems operations market forecast presented in this report provides a positive outlook for the systems operations market over the next five years. The market is forecasted to grow at a compound annual rate of 17% as more businesses and organizations recognize the benefits that outsourcing provides. IBM's entry has signaled to the market that this alternative is imbedded in its strategic direction as it provides this service to large and important clients like Kodak and Bank South.

The systems operations market will be as important a strategic offering for vendors to provide in the 1990s as systems integration was in the 1980s. Vendors will find that they must provide this offering to attract prospects to their products, as well as to retain clients of existing products or services.

A Market Summary

Exhibit VI-1 summarizes the systems operations market characteristics. The driving forces fueling the growth of the market include the desire for improved service levels by the user community and by a lack of operating skills. The desire for service levels improvements is more far reaching than operations alone and includes the desire for application development and maintenance. Many user organizations have experienced difficulties in hiring and retaining skilled operation personnel. Wage increases and improved career growth path requirements are difficult to rationalize within their basic business pay structures.

Hiring an outside systems operations organization is a long-term commitment of five or even ten years. Once a client is lost to a systems operations vendor, the winner has control of equipment, software, supplies purchases, and application change and development. Systems operations vendors who provide superior service have the inside track on future systems operations opportunities, and systems integrators have the inside track on new long-term systems operations contracts.

EXHIBIT VI-1

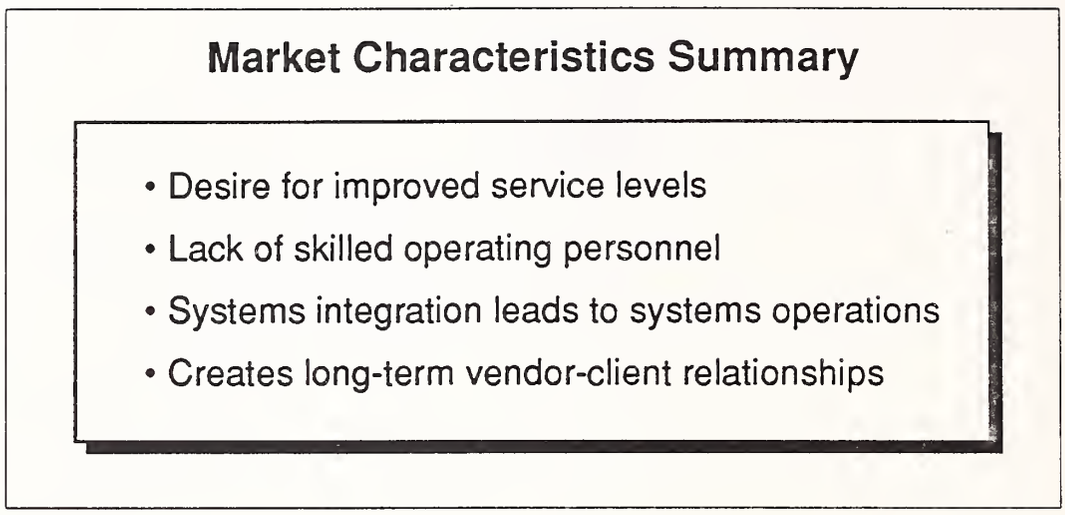
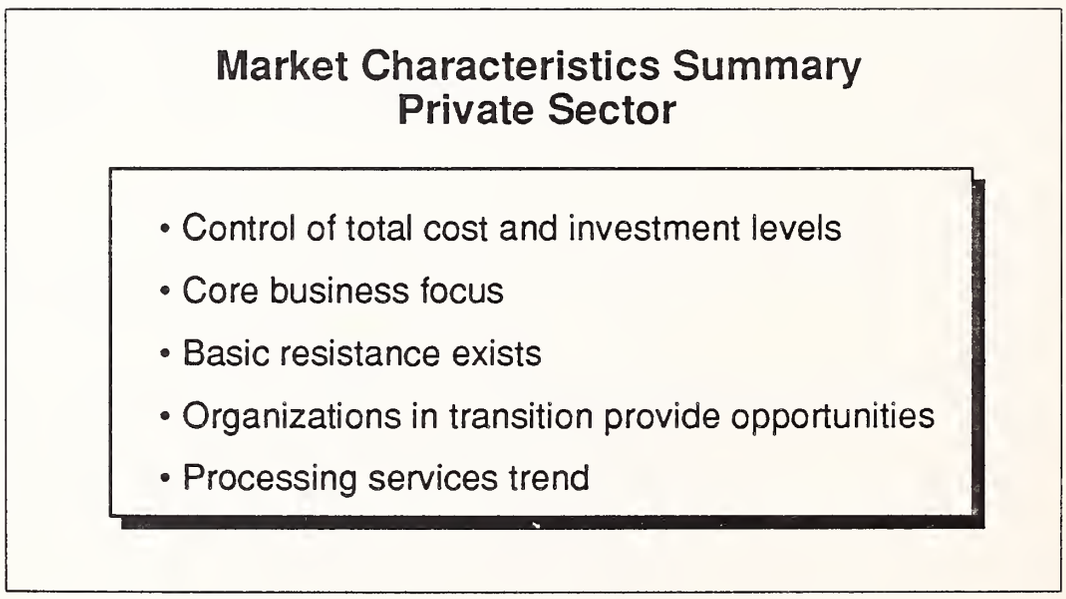


Exhibit VI-2 identifies market characteristics that are unique to the private sector. Commercial customers focus on profit contribution, and many are finding that systems operations, unless focused on "mission-critical" applications, does not add to the organization's bottom line profit. Therefore, they look to outsource nonprofit-contributing activities to vendors that can provide satisfactory service levels at the lowest possible price. Private sector organizations also find systems operations an attractive alternative to investing in new or additional information processing equipment, and the added risk of equipment obsolesence and residual value is placed on the vendor, not the client.

EXHIBIT VI-2



The focus on cost and investment surveys will lead to an increased acceptance of the processing services delivery mode—service provided on vendor-owned equipment. It will grow almost twice as rapidly as the professional services alternative and will dominate the commercial market over the five-year forecast period.

Domestic and international competition has placed additional emphasis on U.S. business competitiveness. Executive management in some organizations has concluded that developing new mission-critical support systems makes the core business more competitive; operating existing systems does not.

Basic resistance to change and new operating approaches exists in many organizations. Organizations that recognize the need for change to be more competitive or that acquire or merge with others are the prime prospects for systems operations services. Businesses that do not have these characteristics are more likely to resist systems operations.

Exhibit VI-3 focuses on unique characteristics of the public sector prospect and client. This group is focused on service levels to its clients and less concerned about capital investment requirements. It is very willing to turn over the operation of mission-critical applications to vendors to meet its customer satisfaction objectives. This sector also recognizes that it can not compete effectively with industry for operating skills. It finds systems operations vendors an attractive alternative for application maintenance and development, especially when it is unable to pay competitive salaries. Because of the federal government's equipment purchase strategy, the majority of systems operations opportunities in this market are for professional services contracts, operating client-owned equipment.

EXHIBIT VI-3

Marketing Characteristics Summary
Public Sector

- Support for mission-critical applications
- Source of faster application development and change
- Professional services trend

B

Vendor Recommendations

The most important recommendation that INPUT can make to vendors is the need for them to recognize that systems operations will be an important delivery mode in the decade ahead. Vendors need to evaluate the implications of SO service offerings on existing strategies. Vendors need to address the addition or improvement of systems operations as a delivery mode in the development of new strategies. Exhibit VI-4 summarizes INPUT's recommendations to vendors that intend to participate in this market.

EXHIBIT VI-4

Vendor Recommendations

- Include SO in business strategy
- Provide full service image
- Focus on organizations experiencing change
- Consider fixed pricing
- Leverage skills and resources
- Include SI in business strategy

There is evidence that participation in this market, by providing systems operations offerings, is important for vendors that desire to attain or retain customer account control. These vendors should seriously consider adding systems operations to their portfolio of offerings. This applies to companies that have a single industry focus as well as those that have a broad market focus.

Systems operations, like systems integration, is becoming a distribution channel for equipment, applications and systems software, and supplies. Vendors that win systems integration contracts become the distribution channel for initial equipment and services, and those that hold the systems operations contracts have long-term control of additional equipment, service and supply purchases. Vendors need to develop a strategy that recognizes and takes advantage of, or complements this market trend.

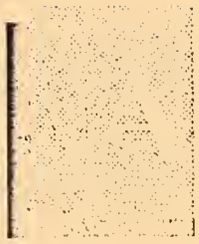
There are a number of alternative appproaches to participating in this market. Vendors should examine their existing skills and capabilities and implement SO strategies that are synergistic and leverage them. Vendors who are providing a broad industry coverage should focus on establishing a highly efficient operating environment that optimizes the use of equipment and skills and leverage these resources across as many clients as possible. Vendors with a narrow industry or functional focus need to concentrate on marketing their industry skills, application knowledge, and prepackaged software solutions.

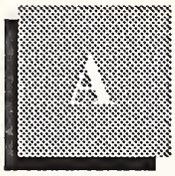
Vendor-owned equipment on vendor premises offers processing services firms pricing leverage not available in the professional services systems operations offering. This leverage makes fixed-price contracting more feasible and more attractive. Vendors should seriously consider the use of fixed-price contracts.

Vendors should also focus sales activities on companies that are in transition or are implementing significant change. Companies that are acquiring or divesting are often anxious to get help in merging or splitting IS support systems, and are willing to consider cost-effective operating alternatives. Sales strategies should focus on these prospects.

Companies that want to be more competitive in world markets are candidates for both systems integration and systems operations. SO vendor strategies should recognize this, and include either internal systems integration capabilities or alliances with systems integrators to take advantage of these opportunities.

Systems operations will become an extremely important offering in the 1990s. Vendors must understand it and insure that its impact is recognized and included in their strategies and plans for the new decade.





Appendix: Definitions

Appendix A contains the definitions used by INPUT to describe and segment the information services industry and market.

Information Services—Computer-related services involving one or more of the following:

- Processing of computer-based applications using vendor computers (called "processing services")
- Network-oriented services or functions such as value-added networks, electronic mail, electronic document interchange, on-line data bases, news data bases, videotex
- Products and services that assist users in performing functions on their own computers or vendor computers (called "software products" or "professional services")
- Services that utilize a combination of hardware and software, integrated into a total system (called "turnkey systems" and/or "systems integration")

All user expenditures reported are "available" (i.e., noncaptive, as defined below).

A

User Expenditures

Noncaptive Information Services User Expenditures—Expenditures paid for information services provided by a vendor that is not part of the same parent corporation as the user

Captive Information Services User Expenditures—Expenditures received from users who are part of the same parent corporation as the vendor

B

Delivery Modes

1. Processing Services

This category includes transaction processing, utility processing, other processing services, and systems operations.

- Transaction Processing Services—Updates client-owned data files by entry of specific business activity, such as sales order, inventory receipt, cash disbursement, etc. Transactions may be entered in one of three modes:

  - Interactive—Characterized by the interaction of the user with the system, primarily for problem-solving timesharing, but also for data entry and transaction processing; the user is on-line to the program/files. Computer response is usually measured in seconds or fractions of a second.

  - Remote Batch—Where the user hands over control of a job to the vendor's computer, which schedules job execution according to priorities and resource requirements. Computer response is measured in minutes or hours.

  - User Site Hardware Services (USHS)—Those offerings provided by processing services vendors that place programmable hardware at the user's site rather than at the vendor's data center. Some vendors in the federal government market provide this service under the label of distributed data services. USHS offers:

    ° Access to a communications network

    ° Access through the network to the RCS vendor's large computers

    ° Local management and storage of a data base subset that will service local terminal users via the connection of a data base processor to the network

    ° Significant software as part of the service

  - Carry-in Batch—Where users deliver work to a processing services vendor

- Utility Processing—Vendor provides access to basic software tools, enabling the users to develop their own problem solutions such as language compilers/assemblers, DBMS, scientific library sort routines, and other systems software.

- "Other" Processing Services—Include computer output microfilm, other data output services, data entry services, disaster recovery, and backup services.

- Systems Operations (Processing Services)—Also referred to as resource management, facilities management, or "COCO" (contractor-owned, contractor-operated). Systems operations is the management of all or part of a user's data processing functions under a long-term contract of not less than one year. This would include remote computing and batch services. To qualify, the contractor must directly plan, control, operate, and manage the system (equipment and system software and/or network) providing service to the user, either on-site or at the vendor's site.

Processing services are further differentiated as follows:

- Cross-industry services involve the processing of applications that are targeted to specific user departments (e.g., finance, personnel, sales) but that cut across industry lines. Most general-ledger, accounts receivable, payroll, and personnel applications fall into this category. General-purpose tools such as financial planning systems, linear regression packages, and other statistical routines are also included. However, when the application, tool, or data base is designed for specific industry use, then the service is industry-specific (see below).

- Industry-specific services provide processing for particular functions or problems unique to an industry or industry group. Specialty applications can be either business or scientific in orientation. Examples of industry-specialty applications are seismic data processing, numerically controlled machine tool software development, and demand deposit accounting.

2. Network Services

Network services include a wide variety of network-based functions and operations. Their common thread is that none of these functions could be performed without network involvement. Network services are divided into two major segments: network applications and electronic information systems.

a. Network Applications

The network applications segment is composed of three subsets:

- Value-Added Networks (VANs)—VANs typically involve common carrier network transmission facilities that are augmented with computerized switching. These networks have become associated with packet-switching technology because the public VANs that have received the most attention (e.g., Telenet and TYMNET) employ packet-switching techniques. However, other added-value data service features, such as store-and-forward message switching, terminal interacting, error detection and correction, and host computing interfacing, are of equal importance.

- Electronic Data Interchange (EDI)—EDI is the application-to-application electronic communication between organizations, based on established business document standards.

- Electronic Mail (E-mail)—E-mail is the transmission of messages across an electronic mail network managed by a services vendor.

b. Electronic Information Services

Electronic information services are data bases that provide specific terminal-based inquiry such as stock prices, legal precedents, economic indicators, medical diagnosis, airline schedules, current news stories, automobile valuations, etc. Users typically inquire into and extract information from these data bases but do not update them.

3. Software Products

This category includes user purchases of applications and systems software packages for in-house computer systems. Included are lease and purchase expenditures, as well as expenditures for work performed by the vendor to implement or maintain the package at the users' sites.

Expenditures for work performed by organizations other than the package vendor are counted in the category of professional services. Fees for work related to education, consulting, and/or custom modification of software products are counted as professional services, provided such fees are charged separately from the price of the software product itself.

There are several subcategories of software products, as indicated below.

a. Applications Software Products

Applications software products perform functions directly related to solving a user's business or organizational needs. The products can be:

- Cross-Industry Products—Used in multiple-industry applications as well as the federal government sector. Examples are payroll, inventory control, and financial planning.

- Industry-Specific Products—Used only in a specific industry sector such as banking and finance, transportation, or discrete manufacturing. Examples are demand deposit accounting, airline scheduling, material resource planning, and insurance claim management.

b. Systems Software Products

Systems software products enable the computer/communications system to perform basic machine-oriented or user interface functions. These products include:

- System Control Products—Function during applications program execution to manage the computer system's resources. Examples include operation systems, communication monitors, emulators, spoolers, network control, library control, windowing, and access control.

- Data Center Management Products—Used by operations personnel to manage the computer system's resources and personnel more effectively. Examples include performance measurement, job accounting, computer operations scheduling, utilities, and capacity management.

- Applications Development Products—Used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Examples include traditional programming languages, 4GLs, sorts, productivity aids, assemblers, compilers, data dictionaries, data base management systems, report writers, project control and CASE systems.

4. Turnkey Systems

A turnkey system is an integration of systems and applications software with CPU hardware and peripherals, packaged as a single application (or set of applications) solution. The value added by the vendor is primarily in the software and support. Most CAD/CAM systems and many small business systems are turnkey systems. This does not include specialized hardware systems such as word processors, cash registers, or process control systems, nor does it include Embedded Computer Resources for military applications. Turnkey systems may be either custom or packaged systems.

- Hardware vendors that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included in the appropriate software category.

- Turnkey systems revenue is divided into two categories:

  - Industry-Specific Systems—Systems that serve a specific function for a given industry sector, such as automobile dealer parts inventory, medical recordkeeping, or discrete manufacturing control systems.

  - Cross-Industry Systems—Systems that provide a specific function that is applicable to a wide range of industry sectors, such as financial planning systems, payroll systems, or personnel management systems.

- Revenue includes hardware, software, and support functions.

5. Systems Integration (SI)

Systems integration is a business offering that provides a complete solution to a complex information system, network, or automation requirement through the custom selection and implementation of a variety of information products and services.

A systems integration concern is a business organization responsible for overall management of a systems integration contract, is the single point of contact, and has responsibility to the buyer for delivery of the specified system function and performance on schedule and at the contracted price.

The systems integrator will perform, or manage others that will perform, most or all of the following functions:

- Program management, including subcontractor management
- Needs analysis
- Specification development
- Conceptual and detailed system design/architecture
- System component selection, modification, integration, and customization
- Custom software design and development
- Custom hardware design and development
- System implementation, cutover, test, and evaluation
- Life cycle support, including:
  - System documentation and user training
  - System operation and/or management
  - System maintenance
- Financing

6. Professional Services

This category includes consulting, education and training, software development, and systems operations as defined below:

- Software Development—Development of a software system on a custom basis. It includes one or more of the following: user requirements definition, system design, contract programming, documentation.

- Education and Training—Products and/or services related to information systems and services for the user, including computer-aided instruction (CAI), computer-based education (CBE), and vendor instruction of user personnel in operations, programming, and maintenance.

- Consulting Services—Information systems and/or services management consulting, project assistance (technical and/or management), feasibility analyses, and cost-effectiveness trade-off studies.

- Systems Operations (Professional Services)—This is a counterpart to systems operations (processing services) except the computing equipment is owned or leased by the client, not by the vendor. The vendor provides the staff to operate, maintain, and manage the client's facility. This service can also be referred to as GOCO (Government Owned, Contractor Operated).

C

Market Segmentation

The information services market has been segmented into 15 vertical industry markets. They are:

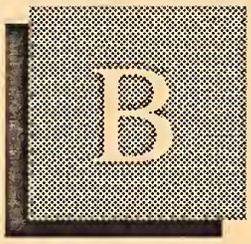
- Banking and Finance
- Discrete Manufacturing
- Education
- Federal Government
- Insurance
- Medical
- Process Manufacturing
- Retail Distribution
- Services
- State and Local Government
- Telecommunications
- Transportation
- Utilities
- Wholesale Distribution
- Other

These classifications are based on standard industrial classification (SIC) codes with the exception of the federal, state, and local governments, and portions of the education industry.

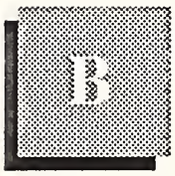
In some analyses within this report, these industries are divided into two groups:

- Public Sector—Federal, state, and local governments and education industries

- Private Sector—The remaining 12 industries: banking and finance, discrete manufacturing, insurance, medical, process manufacturing, retail distribution, services, telecommunications, transportation, utilities, wholesale distribution, and other.



Appendix: Systems Operations Questionnaires



Appendix: Systems Operations Questionnaires

1. Systems Operations—Vendor Questionnaire

Does your company currently offer systems operations or facilities management services?
Y ___ N ___

If no, go to Section 2. If yes, complete Section 1.

SECTION 1 - SYSTEMS OPERATIONS FIRMS

A. BACKGROUND/BUSINESS OBJECTIVES

1. For how many years have you been offering systems operations services? _____years

2. Which of the following modes of service do you provide? Services that are provided on: **(Check all that apply)**

		Col 1 (Q 2)	Col 2 (Q 3)	Col 3 (Q 4)
a.	Client-owned equipment	___	___	___
b.	Equipment you, the SO vendor, own	___	___	___
c.	On client's premise	___	___	___
d.	Your premises	___	___	___
e.	Equipment dedicated to a single client	___	___	___
f.	Equipment shared by multiple clients	___	___	___

3. Which of the just mentioned services modes do the majority of your clients prefer? **(Check all that apply in Column 2, Question 2)** (a or b, c or d, and e or f)

   Briefly describe why_____

   _____

4. Which of the above service modes are most profitable for your organization? **(Check all that apply in Column 3, Question 2)** (a or b, c or d, and e or f)

   Briefly describe why_____

   _____

5. Which of the following services do you offer to your systems operations clients? **(Check all that apply)**

   a. Only operate client-maintained applications ____

   b. Provide application program maintenance (fix) ____

   c. Provide application modifications and enhancements (improve) ____

   d. Develop new applications to operate in existing systems environments ____

   e. Provide systems integration services to develop new complete solutions ____

   f. Act as an agent to clients and perform entire customer functional activity, not just information processing ____

   g. Other **(Specify)**_____ ____

6. A variety of business objectives can be achieved through systems operations. Please indicate with a **P** for primary and **S** for secondary, the key motivators for your firm. **(Leave blank those that do not apply)**

		P/S/Blank
a.	Revenue and profits from systems operations	____
b.	Control of account base	____
c.	Revenue and profit from hardware and/or software sales (called "flow-through")	____
d.	Response to customer demands	____
e.	Other **(Specify)**_____	____

B. SYSTEMS OPERATIONS ORGANIZATION AND STAFFING

7. Which of the following best describes the overall organization of your company's systems operations capability? **(Check all that apply)**

a.	Primary business	____
b.	Separate division(s)	____
c.	Subsidiary(s)	____
d.	Other **(Specify)**_____	____

8. In which of the following geographic areas do you provide services? **(Check all that apply)**

a.	U.S.	____
b.	Europe/Middle East	____
c.	Pacific Rim countries	____
d.	Canada	____
e.	Central/South America	____
f.	Africa	____

The next series of questions will concern both the U.S. and Canadian markets. Please respond only for the markets in which your firm currently participates.

9. How many employees are in the organization(s) that provide(s) systems operations services?

   a. In the U.S. ____

   b. In Canada ____

C. CUSTOMER BASE

10. How many systems operations clients do you have in the commerical and federal markets in the U.S. and Canada? **(Approximately)**

		U.S.	Canada
a.	Commercial	____	____
b.	Federal	____	____

11. What do you believe is your average annual revenue per customer? (In million U.S. dollars)

		U.S.	Canada
a.	Commercial	____	____
b.	Federal	____	____

12. Would you be willing to name five or more customers and give a brief description of how much of the customer's information processing you perform, and identify which specific applications you process?

_____

_____

_____

_____

_____

D. FINANCIAL CHARACTERISTICS

13. Please provide your annual revenues from systems operations. (If you cannot give actual numbers, please provide a range.)

_____

14. What do you expect the annual industry growth rate for systems operations will be in the U.S. and in Canada for the commerical and federal markets for the next five years (1989-1994)?

		U.S.	Canada
a.	Commercial	____	____
b.	Federal	____	____

15. What do you believe are the average industry margins in the commercial and federal systems operations markets?

		U.S.	Canada
a.	Commercial	____	____
b.	Federal	____	____

16. Are these margins increasing or decreasing? **(Please indicate I for increasing or D for decreasing)**

		U.S.	Canada
a.	Commercial	____	____
b.	Federal	____	____

17. What have your recent before-tax margins been for your systems operations business?

		U.S.	Canada
a.	Commercial	____	____
b.	Federal	____	____

18. Which types of contracts do you offer to your systems operations clients and which do you prefer to offer?

		Check all offer	Check all prefer
a.	Fixed-price	____	____
b.	Charges based on transaction volumes	____	____
c.	Cost plus contract	____	____
d.	Other **(Specify)**_____	____	____

E. STRATEGY AND MARKETS

19. Is your systems operations marketing targeted primarily at vertical (industry-focused) or functionally (cross-industry applications) oriented opportunities? **(Check all that apply)**

a. Vertical ____

b. Functional ____

c. Other **(Specify)**_____

20. Please list primary target industries and/or functions.

_____

_____

_____

_____

_____

21. What is your selection criteria for market targets?

_____

_____

22. How do you promote your systems operations business? **(Check all that apply)**

a. Direct mail ____

b. Direct sales coverage ____

c. Advertising (general publications) ____

d. Advertising(trade or industry publications) ____

e. Advertising (radio/television) ____

f. Word of mouth/client referral ____

g. Other **(Describe)**_____ ____

23. How do you find prospects for systems operations? **(Check all that apply)**

a. Respond to requests for RFPs ____

b. Leverage existing contracts ____

c. Direct sales ____

d. Offer subcontracting services to systems integrators ____

e. Other **(Specify)**_____ ____

24. How does your company position itself regarding specific customer benefits, capabilities, and competitive differentiation?

_____

_____

25. Who do you consider to be your major competitors in the commercial systems operations business?... in the federal?

Commercial	**Federal**
_____	_____
_____	_____
_____	_____

F. MARKET DRIVERS

26. Please rate the importance that you believe clients and prospects place on the following factors in evaluating their use of systems operations. Please indicate the positive factors that support using an SO firm with a **P** and negative factors causing prospects not to use an SO firm with an **N. (Leave unimportant factors blank)**

a. Availability of internal operations skills ____

b. Executive energy/time devoted to information-related decisions ____

c. Operating costs ____

d. Service levels ____

e. Responsiveness to requests for application changes and improvements ____

26. (con't)

f. Responsiveness to requests for new application development ____

g. Capital investment requirements for computing equipment and facilities ____

h. Near-term cash flow ____

i. Data security and privacy ____

j. Importance of application and/or information processing to the client's business success ____

k. Operation on a system dedicated to that client's work ____

l. Labor relations/unions ____

m. Other **(Specify)**_____ ____

27. Now please rate the importance that your clients and prospects are placing on the following criteria when selecting a systems operations vendor. Please indicate the primary factors with a **P** and the secondary factors with an **S**. **(Leave unimportant factors blank)**

a. Vendor's systems operations experience ____

b. If part of an SI contract, systems operations were performed by the prime contractor ____

c. SO performed on the customer's premises ____

d. SO performed at the vendor's location ____

e. Vendor-provided applications software maintenance (fix) ____

f. Vendor-provided applications software modifications and enhancements (improve) ____

g. Vendor-provided applications development to run on current hardware environments ____

h. Vendor-provided systems integration services ____

i. Vendor-provided equipment and/or systems software maintenance directly, through OEM or TPM firms ____

j. Lower operating expenses ____

k. Near-term cash flow improvements ____

l. Vendor ability to protect and secure data ____

m. Reduced capital investment requirements ____

n. Vendor industry or application experience ____

o. Labor relations/unions ____

p. Other (**Specify**)_____ ____

G. CAPABILITIES AND PRODUCT OFFERINGS

28. Which of the following additional products and services does your firm offer? In the second column indicate your strength in each area, using H/M/L (High, Medium, Low), and in the third column indicate the importance of this capability to your systems operations business also using H/M/L.

		Offer	Strength H/M/L	Import-ance H/M/L
a.	Business consulting	____	____	____
b.	Systems integration services	____	____	____
c.	Software development services	____	____	____
d.	Education/training/ documentation	____	____	____
e.	Packaged application software	____	____	____
f.	Packaged systems software	____	____	____
g.	Computer/communications hardware	____	____	____
h.	Hardware service and repair	____	____	____
i.	Software maintenance	____	____	____

28. (con't)

		Offer	Strength H/M/L	Import-ance H/M/L
j.	Disaster recovery/service	____	____	____
k.	Other (Specify)_____	____	____	____

29. Are there specific products, services, experience, or technologies which you feel give you a competitive advantage in bidding systems operations contracts? Y N

If yes, please describe them. _____

_____

_____

_____

30. Do you believe that there is a renewed client interest in systems operations? Y N

If yes, what specific trends in the user community do you feel are driving this renewed interest?

_____

_____

SECTION 2—NON-SYSTEMS OPERATIONS FIRMS

Are you considering entering the systems operations market? Y N

(If yes, go to question 1. If no, answer the following question, fill out the cover sheet, and terminate.)

What are the reasons your organization would not consider entry into the SO market?

_____

_____

_____

A. BACKGROUND/BUSINESS OBJECTIVES

1. Which of the following systems operations modes do you think your clients and prospects will prefer? Service on: **(Check all that apply)**

   a. Client-owned equipment ____

   b. Your equipment ____

   c. The client premises ____

   d. Your premises ____

   e. Equipment dedicated to a single client ____

   f. Equipment shared by multiple clients ____

2. Which of the following services would you plan to provide to systems operations clients? **(Check all that apply)**

   a. Only operate client-maintained applications ____

   b. Provide application program maintenance (fix) ____

   c. Provide application modifications and enhancements (improve) ____

   d. Develop new applications to operate in existing systems environments ____

2. (con't)

e. Provide systems integration services to develop new complete solutions ____

f. Act as an agent to clients and perform entire customer functional activity, not just information processing ____

g. Other (**Specify**)_____ ____

3. A variety of business objectives can be achieved through systems operations. Please indicate with a P for primary and S for secondary, those motivators that appear to be key to your firm. **(Leave blank those that do not apply)**

a. Revenue and profits from systems operations ____

b. Control of account base ____

c. Revenue and profits from hardware and/or software sales ____

d. Response to customer demands ____

e. Other (**Specify**)_____ ____

B. MARKET CHARACTERISTICS

The following questions pertain to both the U.S. and Canadian markets. Please answer for those markets in which your firm currently participates.

4. What do you expect the annual industry growth rate for systems operations will be in the U.S. and Canada for the commercial and federal markets for the next five years (1989-1994)?

	U.S.	Canada
a. Commercial	____	____
b. Federal	____	____

5. What do you believe are the average industry margins in the commercial and federal systems operations markets?

	U.S.	Canada
a. Commercial	____	____
b. Federal	____	____

6. Are these margins increasing or decreasing? **(Please indicate I for increasing or D for decreasing)**

		U.S.	Canada
a.	Commercial	____	____
b.	Federal	____	____

7. Who do you consider to be the major competitors in the systems operations business?

Commercial	**Federal**
_____	_____
_____	_____
_____	_____

C. MARKET DRIVERS

8. Please rate the importance that you believe clients and prospects will place on the following factors in evaluating their use of systems operations. Please indicate the positive factors that support using an SO firm with a **P** and negative factors causing clients not to use an SO with an **N**. **(Leave unimportant factors blank)**

a.	Availability of internal operations skills	____
b.	Executive energy/time devoted to information-related decisions	____
c.	Operating costs	____
d.	Service levels	____
e.	Responsiveness to requests for application changes and improvements	____
f.	Responsiveness to requests for new application development	____
g.	Capital investment requirements for computing equipment and facilities	____
h.	Near-term cash flow	____
i.	Data security and privacy	____

8. (con't)

j. Importance of application and/or information processing to the client's business success ____

k. Operation on a system dedicated to that client's work only ____

l. Labor relations/unions ____

m. Other (**Specify**)_____ ____

9. Now please rate the importance that you believe users and prospects of systems operations are placing on the following criteria when selecting a systems operations vendor. Please indicate the primary factors with a **P** and the secondary factors with an **S**. **(Leave unimportant factors blank)**

a. Vendors systems operations experience ____

b. If part of an SI contract, systems operations were performed by the prime contractor ____

c. SO performed on the customer's premises ____

d. SO performed at the vendor's location ____

e. Vendor-provided applications software maintenance (fix) ____

f. Vendor-provided applications software modifications and enhancements (improve) ____

g. Vendor-provided applications development to run on current hardware environments ____

h. Vendor-provided systems integration services ____

i. Vendor-provided equipment and/or systems software maintenance directly, through OEM or TPM firms ____

j. Lower operating expenses ____

k. Near-term cash flow improvements ____

l. Vendor ability to protect and secure data ____

m. Reduced capital investment requirements ____

n. Vendor industry or application experience ____

o. Labor relations/unions ____

p. Other **(Specify)**_____ ____

D. CAPABILITIES AND PRODUCT OFFERINGS

10. Which of the following products and services does your firm offer? In the second column indicate your strength in each area, using H/M/L, and in the third column indicate the importance of this capability to your systems operations business plans, also using H/M/L.

		Offer	Strength H/M/L	Importance H/M/L
a.	Business consulting	___	___	___
b.	Systems integration services	___	___	___
c.	Software development services	___	___	___
d.	Education/training/ documentation	___	___	___
e.	Packaged application software	___	___	___
f.	Packaged systems software	___	___	___
g.	Computer/communications hardware	___	___	___
h.	Hardware service and repair	___	___	___
i.	Software maintenance	___	___	___
j.	Disaster recovery/service	___	___	___
k.	Other **(Specify)** _____	___	___	___

11. Are there specific products, services, experience, or technologies which you feel would give your company a competitive advantage in bidding systems operations? Y N

If there are, please describe them: _____

_____

12. Do you agree that there is a renewed client interest in systems operations? Y N

12a. If yes, what specific trends in the user community do you feel are driving this renewed interest?

_____

_____

_____

2. Systems Operations—User Questionnaire

1. Are you currently using or planning to use an outside vendor (a systems operations or facility management firm) to operate any of the information systems that support your business?

Check One

a. Currently using an SO firm **(Go to Question 2)** ____

b. Plan to use an SO firm **(Go to Question 2)** ____

c. Neither **(Go to Question 32)** ____

2. Briefly describe the system and the application(s) it addresses.

_____

_____

SYSTEMS OPERATIONS

3. Who is the vendor you selected to operate this system?

_____

_____

4. Is or will the system be: **(Check One)**

a. Operated on equipment your organization owns? ____

b. Operated on equipment that your organization leases? ____

c. Operated on equipment owned or leased by the SO vendor? ____

d. Other, please explain _____

_____

5. Is or will the system be: **(Check One)**

a. Operated on your premises in a facility you own? ____

b. Operated in the vendor's facility? ____

c. Other, please explain _____

_____

6. Will the system be operated on hardware that is: **(Check One)**

   a. Dedicated to your organization's work? ____

   b. Shared with the vendor's other customers? ____

   c. Other, please explain_____

   _____

7. How long a period is/was the base contract for systems operations?____

8. What type of contract do you have for the operation of this system? **(Check One)**

   a. Fixed-price ____

   b. Charges are based on transaction volumes ____

   c. Cost plus contract ____

   d. Other, please describe _____ ____

   _____

9. How is or will the systems applications be maintained? **(Check One)**

   a. Through your internal DP organization ____

   b. The systems operations firm will maintain it as part of the base SO contract ____

   c. Other, please describe _____ ____

   _____

10. Rate the importance of the following factors in your organization's original evaluation as to whether systems operations was a viable alternative. Are they of primary importance, or secondary importance, or not important at all? **(P—Primary Importance, S—Secondary Importance, N—Not Important)**

a.	Availability of internal operations skills	P S N
b.	Amount of executive energy and time devoted to operations-related decisions	P S N
c.	Lower operating expense	P S N
d.	Better and/or more flexible service	P S N
e.	Faster responses to requests for application changes and improvements	P S N

f.	Faster responses to requests for new applications development	P S N
g.	Reduced capital investments in computing equipment and facilities	P S N
h.	Near-term cash flow improvements	P S N
i.	Security or privacy of your organization's data	P S N
j.	Ability to respond to additional or reduced personnel requirements	P S N
k.	Labor relations/unions	P S N
l.	Mission-critical application/system	P S N
m.	Operation on a system dedicated to your work only	P S N
n.	Other, please describe _____	P S N

_____

11. Rate the importance you placed on the following factors in actually selecting a systems operations firm. **(P—Primary Importance, S—Secondary Importance, N—Not Important)**

a.	Vendor's systems operations experience	P S N
b.	If part of an SI contract, systems operations were performed by the prime contractor, not a subcontractor	P S N
c.	SO performed in your organization's facility	P S N
d.	SO performed at the vendor's location	P S N
e.	Vendor-provided applications software maintenance **(fix)**	P S N
f.	Vendor-provided applications software modifications and enhancements (improve)	P S N
g.	Vendor-provided equipment and/or systems software maintenance directly, through OEM or TPM firms	P S N
h.	Overall cost	P S N
i.	Near-term cash flow improvements	P S N

11. (con't)

j. Ability to protect and secure your data P S N

k. Reduced capital investment requirements P S N

l. Labor relations/unions P S N

m. Other systems operations features or criteria. P S N
Please describe _____

_____

12. How did your organization solicit a systems operations firm to address your requirements? **(Check One)**

a. Published a bid to all interested parties ____

b. Sent an invitation to bid to a select list of vendors ____

c. Invited a response from a single vendor ____

d. Other, please describe _____ ____

_____

13. Do you intend to bring this work back to an in-house staff in the future? Y N

14. Will the cost to operate this system be more or less than if you were to run it in-house with your own personnel on equipment your organization owns?

MORE____ LESS____

SYSTEMS INTEGRATOR DEVELOPED SYSTEM

15. Did you contract to a systems integrator for development and implementation of the system? Y N

(If yes, go to Q16. If no, go to Q20.)

16. Who was the vendor?_____

17. When did you decide to have this system operated by an outside vendor? **(Check One)**

a. Systems operations was included in our original systems integration request and decision. ____

b. It was a separate decision independent of the decision to use a systems integrator. ____

c. Other, please explain _____ ____

_____

18. If you were able to make the decision about operation of this system over again or to make a similar decision for the operation of a system to be developed in the future, would you: **(Check One)**

    a. Include systems operations as part of the systems integration decision? ____

    b. Keep systems operations an independent decision? ____

    c. Would not use systems operations ____

    d. Other, please describe _____ ____

    _____

19. Do you believe your organization would have contracted for external operations of this application/system if it had been developed by your own internal data processing personnel?

    a. Yes ____
    b. No ____
    c. Not an option, don't have internal data processing personnel ____

SYSTEM IS CURRENTLY BEING OPERATED BY SYSTEMS OPERATIONS FIRM

20. Is the systems operations firm currently operating this system? Y N

    (If yes, go to question 21. If no, go to question 26)

21. Rate your level of satisfaction with the systems operations vendor's performance in the following areas: **(Please rate on a scale of 1 to 5, with 1 representing very dissatisfied, and 5 representing very satisfied.) (Circle Number)**

    a. Quality of work 1 2 3 4 5

    b. Cost of service 1 2 3 4 5

    c. System performance and/or terminal response times 1 2 3 4 5

    d. Ability to make changes and enhancements 1 2 3 4 5

    e. Cost of making changes and enhancements 1 2 3 4 5

    f. Are there other areas of satisfaction or dissatisfaction? **(Please describe and rate their importance)**

    Other_____ 1 2 3 4 5

    Other_____ 1 2 3 4 5

22. Have you identified any disadvantages or significant problems using a systems operations firm? Y N

If yes, please describe _____

_____

23. Please rate some time commitment categories. In your opinion, has the use of systems operations increased, decreased, or had no impact on management's time commitments to IS decisions, both during start-up and after implementation? **(I—Increase, D—Decrease, N—No Impact)**

		Start-up	Full operations
a.	Organization executive management (e.g. president, Sr. staff management)	I D N	I D N
b.	Internal information processing management (e.g. CIO, VP or Director of IS)	I D N	I D N
c.	The functional user management (Operational Management)	I D N	I D N

24. Have you experienced, or do you anticipate, systems operations cost increases or decreases over time in the following areas? **(I—Increase, D—Decrease, S—About the Same)**

		Experience	Anticipate
a.	Cost per transaction	I D S	I D S
b.	Total cost	I D S	I D S
c.	Cost of modification and enhancement	I D S	I D S

25. If you were to use a systems operations firm again, would you consider the same firm and would they have the inside track on this work?

a.	Would consider same firm	Y N
b.	Same firm would have inside track	Y N

FUTURE SYSTEMS INTEGRATION AND SYSTEMS OPERATIONS PLANS

26. What is your estimate of the total information system budget for your organization today and in five years (1994)?

a. Today's budget _____

b. Five years from now (1994) _____

27. What percentage of your organization's information systems budget will be spent for the following activities this year and in 1994?

		1989	1994
a.	Vendor-provided systems integration	____	____
b.	Vendor-provided systems operations	____	____

28. What will be the major factors causing this change, or lack of change (**identified in question 27**)?

a. For systems integration: _____

_____

b. For systems operations: _____

_____

29. In what way could services provided by systems operations firms be made more valuable to your organization?

_____

_____

30. Are there application areas your organization would not allow a systems operations firm to run for it? Y N

If yes, what are they _____

_____

31. Would your organization consider turning the operations of the entire functional activity, as well as the information processing activities, over to an appropriately experienced operations firm? Y N

If yes, what functional activities would you consider as candidates for external operations?

_____

_____

END OF SYSTEMS OPERATIONS USERS QUESTIONNAIRE

NON-SYSTEMS OPERATIONS USERS TRACK

32. Has your organization ever contracted with a systems integrator to develop and implement a complete information systems solution? Y N

32a. Briefly describe the application area:

_____

_____

32b. Who was the vendor?

_____

(If yes, go to question 33. If no, go to question 34)

33. Was systems operations considered at all as part of that systems integration bid solicitation? Y N

34. Has your organization ever considered, or will it consider in the future, using an outside firm to operate any of your information systems? Y N

(If yes, go to question 35. If no, go to question 34a and terminate interview at end of response.)

34a. Please describe the major reasons why your organization would not consider using this service:

_____

_____

35. When considering using systems operations as an alternative, rate the importance of the following factors in that evaluation. Are they of primary importance, secondary importance, or not important at all? **(P—Primary Importance, S—Secondary Importance, N—Not Important)**

a.	Availability of internal operations skills	P S N
b.	Amount of executive energy and time devoted to operations-related decisions	P S N
c.	Lower operating expense	P S N
d.	Better and/or more flexible service	P S N
e.	Faster responses to requests for application changes and improvements	P S N
f.	Faster responses to new application development	P S N

g.	Reduced capital investments in computing equipment and facilities	P	S	N
h.	Near-term cash flow improvements	P	S	N
i.	Security or privacy of your organization's data	P	S	N
j.	Ability to respond to additional or reduced personnel requirements	P	S	N
k.	Labor relations/unions	P	S	N
l.	The importance of the application to your business operations (mission-critical)	P	S	N
m.	Operation on a system dedicated to your work only	P	S	N
n.	Other, please describe _____	P	S	N

_____

36. Rate the importance your company would then place on the following factors in actually selecting a systems operations firm. Are they of primary importance, secondary importance, or not important at all? **(P—Primary Importance, S—Secondary Importance, N—Not Important)**

a.	Vendor's systems operations experience	P	S	N
b.	If part of an SI contract, systems operations were performed by the prime contractor, not a subcontractor	P	S	N
c.	SO performed in your company's facility	P	S	N
d.	SO performed at the vendor's location	P	S	N
e.	Vendor-provided applications software maintenance (fix)	P	S	N
f.	Vendor-provided applications software modifications and enhancements (improve)	P	S	N
g.	Equipment and/or systems software maintenance provided by the vendor directly, or through OEM or TPM firms.	P	S	N
h.	Overall cost	P	S	N
i.	Near-term cash flow improvements	P	S	N
j.	Ability to protect and secure your data	P	S	N

36. (con't)

k.	Reduced capital investment requirements	P	S	N
l.	Labor relations/unions	P	S	N
m.	Other systems operations features or criteria Please describe _____	P	S	N

37. Does your organization believe that there are significant disadvantages or inhibitors to using a systems operations firm? Y N

If yes, please identify them _____

FUTURE SYSTEMS INTEGRATION AND SYSTEMS OPERATION PLANS

38. What is your estimate of the total information systems budget for your organization today and in five years (1994)?

a. Today's budget _____

b. Five years from now (1994) _____

39. What percentage of your organization's information systems budget will be spent for the following activities this year and in 1994?

		1989	**1994**
a.	Vendor-provided systems integration	____	____
b.	Vendor-provided systems operations	____	____

40. What will be the major factors causing this change, or lack of change **(identified in question 39)? (Please describe)**

a. For systems integration: _____

b. For systems operations:_____

41. In what way could services provided by systems operations firms be made more valuable to your organization?

_____

_____

42. Are there application areas your organization would not allow a systems operations firm to run for it? Y N

If yes, what are they _____

_____

43. Would your organization consider turning the operations of the entire functional activity, as well as the information processing activities, over to an appropriately experienced operations firm? Y N

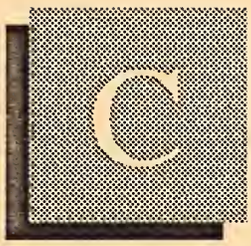
If yes, what functional activities would you consider as candidates for external operations?

_____

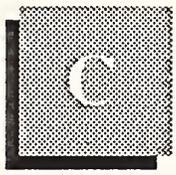
_____

_____

END OF NON-SYSTEMS OPERATIONS USERS QUESTIONNAIRE



Appendix: Data Base



Appendix: Data Base

EXHIBIT C-1

Systems Operations User Expenditure Forecast by Delivery Mode, 1989-1994 ($ Millions)

Industry Sector	1988	Growth 1988-1989 (Percent)	1989	1990	1991	1992	1993	1994	CAGR 1989-1994 (Percent)
Total Systems Operations	5,038	18	5,935	6,890	8,016	9,352	10,937	12,816	17
Processing Services	3,635	19	4,330	5,107	6,024	7,115	8,410	9,947	18
Professional Services	1,403	14	1,605	1,783	1,992	2,237	2,527	2,869	12

EXHIBIT C-2

Systems Operations (Processing Services)
User Expenditure Forecast by Industry Sector, 1989-1994
($ Millions)

Industry Sector	1988	Growth 1988-1989 (Percent)	1989	1990	1991	1992	1993	1994	CAGR 1989-1994 (Percent)
Total Processing Services	3,635	19	4,330	5,107	6,024	7,115	8,410	9,947	18
Discrete Hanufacturing	100	14	114	137	164	197	236	284	20
Process Hanufacturing	200	88	3 77	442	517	604	707	827	17
Transportation	40	18	47	53	59	66	74	83	12
Utilities	30	12	34	39	44	51	59	68	15
Telecommunications	35	35	47	55	64	74	86	99	16
Wholesale Distribution	60	12	67	80	95	113	135	160	19
Retail Distribution	15	8	16	20	25	32	40	49	25
Banking & Finance	1,200	18	1,416	1643	1,905	2,210	2,564	2974	16
Insurance	545	13	616	751	917	1,118	1,364	1664	22
Medical	550	15	633	727	836	962	1,106	1,272	15
Education	70	4	73	80	88	97	107	117	10
Services	10	25	13	15	18	22	26	31	20
Federal Government	215	16	249	292	341	399	467	547	17
State & Local Gov't	550	11	611	751	924	1,136	1,397	1719	23
Other Industry Sector	15	15	17	22	27	34	42	53	25